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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. II.—5TH YEAR. SYDNEY: SATURDAY, JULY 13, 1918. No. 2.

A BACTERIOLOGICAL STUDY OF SEVENTY CASES OF URINARY INFECTION, WITH SPECIAL REFERENCE TO PYELITIS.[1]

By K. F. C. Brunnich, M.B., Ch.M. (Syd.),
Brisbane.

The cases include pyelitis, cystitis, infection following catheterization for retention of urine after abdominal and pelvic operations, and during typhoid and paratyphoid fevers, tetanus, cerebral hæmorrhage; also infection following prostatectomy, nephrectomy, renal and ureteral calculi, and several cases associated with a leucorrhœal discharge.

All the urines examined were sterile catheter specimens, and as soon as possible cultures were made on plain agar slants, and on MacConkey's medium in Petri dishes. Isolated colonies were selected and subcultured into bouillon. From the 24 hours' culture in bouillon, inoculations were made into Durham's fermentation tubes, containing, respectively, glucose, mannite, dulcite, lactose, and saccharose; a tube of litmus milk, and a gelatine slope were inoculated at the same time. The fermentation changes of acid and gas formation were noted daily from seven to fourteen days, the end reactions being indicated in the diagram. A twenty-four hours' broth culture of the organism was examined for motility, and smears of the organism were stained by Gram's method. A seven days' culture in broth was examined for indol by Ehrich's rosindol reaction.

In sixty-eight specimens of urine, twenty-five different types of Gram-negative bacilli were found; six specimens contained combined infections of two or more organisms.

Staphylococcus pyogenes aureus, and *staphylococcus pyogenes albus* were found to be the infective agents in the remaining two specimens, each in pure culture.

The organisms were classified according to their motility, fermentation reactions, indol formation, and their action on gelatine, and litmus milk.

The majority of the organisms (60) came under ten groups, the remainder only being found once.

The type corresponding to *bacillus coli* was found in twenty, *bacillus acidi lactici* (Hüppe) in sixteen, and *bacillus lactis aerogenes* in seven.

One is struck by the diversity in the organisms infecting the urine, but when it is realized that infection is caused in some instances by contamination with fæcal matter, it is more easily understood.

The great variation in organisms also explains the unsatisfactory results in vaccine treatment for chronic infections of the urinary tract, if stock vaccines are employed and not autogenous. Vaccines were prepared in all cases and used with satisfactory results in the great majority.

When there is abundant pus in the urine, and the urine is sterile on culture, tubercle bacilli should be suspected. The best results are obtained by examining the centrifuged deposit of the whole of the urine passed for twenty-four hours, but at the same time I have found tubercle bacilli in as small a quantity as one cubic centimetre obtained by ureteral catheterization. Results of the examination can be confirmed by inoculating a guinea-pig with the pus, one cubic centimetre being injected under the skin of the upper and inner part of the thigh. The glands of the groin are then bruised slightly with the fingers, so that they will be more readily infected.

The guinea-pig should be killed in a month's time, and if the pus was tubercular, the glands will have enlarged and caseated in parts. Tubercle bacilli can be regained from the pus in the gland, and can be grown very often in pure culture on Dorset's egg medium.

I have found pyelitis, and cystitis due to infection with bacilli of the colon type very common in general practice.

Pyelitis is more common in women than men, in the proportion of about two to one, and I have noticed that women complaining of bladder trouble, often have a leucorrhœal discharge. Bacilli of the colon type are nearly always to be found in the latter discharge by microscopical and cultural examination, the organisms probably originating from fæcal matter on the perineum. The discharge acts as a medium in the conveyance of the bacteria to the urethra, and the organisms can then easily find their way up the short urethra to the bladder. Babies may be infected from soiled napkins or from the passage of stools over the vulva. Clinically pyelitis commences with a rigor and a rise in temperature, together with severe unilateral pain in the lumbar region, and frequent micturition.

Pathology.

In acute catarrhal pyelitis the mucous membrane in congested, swollen and hyperæmic, and on its surface may be seen pus cells and a few red cells and desquamated epithelial cells.

In chronic pyelitis the mucous membrane is brownish or greyish red in colour, frequently pigmented, and nearly always thickened and covered with a thin layer consisting of mucus, pus, and epithelial cells.

The corresponding ureter is usually involved. The mucous membrane of the ureter may be chiefly affected or the surrounding connective tissue may also be involved, constituting a periureteritis.

The changes in the mucous membrane of the ureter are of a similar character to those in the mucous membrane of the renal pelvis.

Symptoms and Diagnosis.

Pyelitis may occur as a febrile affection with sudden onset, headache, anorexia, rigors or chilly sensations, nausea and vomiting, sometimes pain in the back and loins.

The temperature may show marked daily fluctuation, and may rise as high as 40.5° C.. The pulse is usually rapid, and full.

[1] Read at a Meeting of the Queensland Branch of the British Medical Association on May 3, 1918.

In children, restlessness, pallor, loss of appetite, and depression are often the only signs, and in these as in adults the disease may simulate influenza, or typhoid fever.

At the onset some suppression of the urine may occur, but polyuria is the rule. There is usually frequency of micturition, sometimes with pain or burning, even when the bladder is not involved, probably a reflex phenomenon as occurs in cases of tubercular kidney.

The local manifestations are usually unilateral, and the right kidney is more likely to be affected than the left.

Pain or sensitiveness to pressure may be constant, or only present during acute exacerbations, and is generally present in the subcostal, lumbar, and in the iliac regions when the ureters are effected.

The pain may start in the loin, or right or left hypochondrium, and radiate downwards towards the iliac fossa and pelvis.

The kidney may be definitely tender, and even enlarged when the pain is trivial.

Pyelitis occasionally occurs in a much milder form, and may last for years without any apparent constitutional disturbances, especially when the organism is not very virulent. Careful questioning will usually elicit a history of slight digestive disturbances, loss of strength, mild febrile attacks, and transitory attacks of subcostal pain.

In some cases there are symptoms of cystitis, painful, frequent micturition, and hypogastric tenderness, before the onset of the pyelitis.

Some patients do not have painful urination, especially at the beginning of the attack; others suffer from dysuria, from the very onset of the disease.

The urine is usually acid, but may be neutral or alkaline in reaction. As a general rule *bacillus coli* infections produce acid reactions, and infections with bacilli of the proteus type produce alkaline reactions.

The urine is slightly turbid or opalescent with a slight residue of pus. The turbidity of the specimen does not clear up with boiling, or with the addition of acids, and persists after filtering.

It is due to the presence of bacilli, more often bacilli of the colon type.

The amount of albumin is slight.

The specific gravity is frequently low, due to the larger quantity of urine secreted.

Microscopical examination of a drop of the urine with a ⅙ inch lens, and a narrow diaphragm, in a typical case will show numerous pus cells, isolated and congregated into clumps, and bacilli which can easily be seen with the magnification of about 450.

The pus cells have a granular cytoplasm, and a "polylobed" nucleus.

The bacilli are at times found in clumps, or forming jointed rods.

In the more acute cases a few red corpuscles may be seen amongst the pus cells.

There is an absence of the usual bladder epithelial cells, seen in such abundance in cystitis, but epithelial cells from the renal pelvis are occasionally found. I have found the addition of a drop of Neisser's methylene blue, as used in the staining of diptheria bacilli, and containing acetic acid, to the urine on a microscopic slide very useful.

The pus cells swell out, their nuclei become very distinct, the bacilli absorb the stain, the field is darkened by the stain, and therefore the microscopic examination is greatly facilitated.

A doubtful urine should be centrifuged, and the sediment examined in the above way.

In women the urine examined should be a sterile catheter specimen, because pus cells and organisms are so frequently found in vaginal discharges, which may contaminate the specimen for examination.

In men the urine should be passed into two vessels, the second specimen being retained for examination. I have very often found specimens so taken in sterile vessels to be sterile on culture.

Pyelitis would not be regarded as a rare affection if the urine were regularly examined microscopically, and bacteriologically, and if the kidneys were palpated in all apparently acute abdominal affections.

The symptoms of pyelitis are frequently misinterpreted, acute cases have been diagnosed and operated on as appendicitis, and mild types of the disease are frequently regarded as lumbago.

Right pyelitis may simulate appendicitis, if the ureter is tender, and the ureteral tenderness may coincide with McBurney's point.

The pain may be diffuse, and not localized to the renal regions, and as there may not be any vesical symptoms, nothing in the history of the case may draw attention to the urinary system.

The abdomen may be so diffusely tender, and palpation rendered difficult by muscular rigidity, that tenderness of the kidney is easily overlooked. Tenderness of the affected kidney may be detected by deep pressure in the costo-vertebral angles, and palpating the kidney over the upper part of the abdomen with the other hand at the same time.

The kidney is sometimes enlarged and exquisitely tender.

The rigidity of the muscles in pyelitis, as a general rule, is more localized to the lumbar regions, whereas in appendicitis the rigidity is more marked in the right iliac region, but this is not an invariable rule, as in the case of acute appendicitis, seen recently, the reverse was the case, due to the appendix being on the outer side of the caecum, and directed up towards the right kidney.

The rigidity is less absolute than that of peritonitis, and diminishes if the patient's attention is diverted.

Also dryness of the tongue, and abdominal facies are usually absent.

The diagnosis of pyelitis can be made with certainty only after microscopical and bacteriological examination of the urine. I think it absolutely imperative to examine the urine before operating in a case diagnosed as acute appendicitis; sooner or later, a mistake will be made, if this is not done. Clinical tests for albumin and sugar are insufficient. The leucocytosis is much less than in appendicitis, and will assist in the differential diagnosis.

The possibility of pyelitis should be always borne in mind in cases of obscure fever in childhood. Rigors and fevers should direct attention to examination of the urine.

A cystoscopic examination of the bladder should be made, and the ureteral orifices inspected.

Ureteral catheterization will lead to the detection of the presence of any ureteral stricture, and the localization of the infection.

It is advisable to attempt to palpate the ureters, either *per vaginam*, or *per rectum*, the inflamed ureter being felt as a thickened cord.

Ætiology.

Anything that tends to block the flow of urine through the normal channel, and produce a damming up of the urine, as in old prostatics, with retention will lower the local resistance, and thereby constitute a factor in the ætiology of the disease.

A contributing factor is urinary stasis from fever, toxæmia, trauma, and retention caused by stricture of ureter, or urethra, narrow urinary meatus, or phimosis. In women cystocele is a potent cause.

There are three possibilities of infection: (1) an ascending infection by way of the urinary tract and mural lymphatics; (2) a hæmatogenous infection; and (3) an infection from the contiguous colon.

(1) Probably in the majority of cases the pyelitis is due to an ascending infection. This explains the predisposition of women, in whom the organisms easily gain access to the urethra and bladder.

Infections of the bladder may reach the renal pelvis by way of the lumen of the urinary tract, or by the mural lymphatics.

The greater frequency with which the right kidney is affected may be due to the greater frequency with which the right kidney is mobile, the mobility causing kinking of the ureter.

(2) Hæmatogenous infection from the circulation of infected blood through the kidneys. In many cases of bacteriuria, the source of the bacteria is undoubtedly the gastro-intestinal tract, for it has been shown that even a slightly altered intestinal mucous membrane is pervious to bacteria. Bacteria may thus reach the blood and lymph stream, and be carried to the kidneys or bladder.

(3) In infection of the right kidney by colon bacilli from the neighbouring and often contiguous colon, the bacilli making their way through the wall of the intestine into the lymphatics by way of the ureter and surrounding tissues to the pelvis of the kidney.

Chill appears to be an exciting cause.

Constipation is a predisposing cause.

An attack of pyelitis sometimes recurs three to four days before a menstrual period, and causes a premenstrual pyrexia.

The course of the disease is variable.

The symptoms may subside as rapidly as they appear, or the condition may become chronic. The first febrile period may last five or six days, and the temperature become normal, either by crisis or lysis, more commonly the latter. There may be a second pyrexial period a few days later, due to infection of the previously healthy kidney.

The prognosis of simple pyelitis is good. If there is a co-existing kidney or bladder trouble, the outlook is not so good.

One cause of failure is the residual urine, due to imperfect emptying of the bladder, such as would occur with an enlarged prostate, or marked cystocele.

Another contributing cause of failure is intestinal stasis.

Non-attention to the degree of acidity of the urine during later treatment is an additional cause of failure.

Treatment.

Many cases clear up under medicinal and hygenic measures, the chief of which are rest in bed, milk diet, purgation, free ingestion of fluids. All irritating drugs and beverages containing alcohol should be avoided.

Counter irritation by the use of mustard plasters, Paquelin cautery, hot poultices, or fomentations, or hot water bags over the kidney are all of real value. A thick cotton-wool jacket over the lumbar regions should supplement the counter irritation.

Postural treatment is of great value in the pyelitis of pregnancy, the patient being kept on the right side, or upon the abdomen, when the uterus will gravitate away from the right ureter, thereby allowing the kidney to drain.

The medicinal treatment in the acute stages consists in the administration of large doses of alkali, as potassium citrate and potassium bicarbonate, with belladonna or hyoscyamus. The alkaline drugs should be given for four or five days until the fever shows signs of abating. When the symptoms have subsided, the urine should be rendered acid by giving acid sodium phosphate (1.00 to 1.3 gm.) three times a day, and the formaldehyde eliminating compounds, as hexamine, in progressive doses.

Surgical intervention is not required except when the patient loses ground under medical treatment, or serious pyonephrosis supervenes, when nephrotomy, nephrectomy, or pyelotomy should be preformed. In all cases the presence and functional ability of the other kidney should be determined before operation is performed. Some brilliant cures in the case of unilateral pyelitis have been reported after nephrotomy.

Pelvic lavage by catheterizing the ureters and irrigating the renal pelvis with weak solutions of silver nitrate (1 in 3,000), 3 to 5 c.cm., of a 10% argyrol solution, or a 2% solution of aluminium acetate, or other antiseptic has given good results, and has even been successful in early pregnancy. The production of abortion or the induction of premature labour is seldom necessary in the treatment of pyelitis of pregnancy, but it may be called for in severe cases.

If the fever is high, phenacetin or quinine can be given.

For severe pain hot compresses may be tried, and recourse will have to be had to morphine, either by mouth, hypodermically or by suppository.

Sleeplessness may be alleviated by bromides or barbitone.

Vaccine treatment gives good results, more especially when the disease becomes chronic. Relapse

may occur a few months later, in which case it is advisable to prepare a fresh autogenous vaccine.

Vaccines sometimes are disappointing. Certainly while obstruction exists, no greater results can logically be hoped for from their use. Stock vaccines are very often disappointing, not because of any fault in their preparation, but because of the variety of bacilli of the colon type, the organisms composing the vaccine, may not correspond to the organisms infecting the urine. I have seen striking results in the relief of frequent urination, particularly noctural, in cases of chronic pyelitis, by giving weekly injections of autogenous vaccines. Patients who had formerly to pass urine five or six times at night, passed it only once, though the organisms were still present in the urine. No other treatment was given at the time.

Anti-colon bacillus serum has given good results in some cases.

In cases of urinary infection with an alkaline and offensive urine, due in the majority to infection with bacilli of the proteus type, the introduction of a pure culture of *bacillus acidi lactici* has proved a most useful therapeutic agent, and it helps to prevent deposition of lime salts, and thus lessens the tendency to stone formation.

An important prophylactic measure in children, and especially in girls, is to insist on great cleanliness of the genitals, and always washing from the front backward.

By far the most important thing in the treatment of pyelitis is the early recognition of the infection, and this depends on careful observation and urine analysis on the part of the physician.

I have examined the urine of patients with a bacilluria, due to colon bacilli, who had been taking 0.6 gramme of hexamine three times a day for a week. In one case hæmaturia developed, and this urine I tested with phloroglucin and Schiff's reagent, and obtained a well marked reaction for formaldehyde, and on culturing the urine there was a profuse growth of the colon bacilli. I thought that the reason that there was such growth was possibly that the organisms were not exposed to the action of the formaldehyde for a sufficient length of time. This led to further experiments with the urine.

From a patient taking hexamine (0.6 gramme) three times a day, I obtained another specimen with acidity 6.7 against decinormal soda, and formaldehyde present at least 1 in 20,000, as indicated by an intense blue colour with the Rimini-Burman test (phenylhydrazine 5% solution, sodium nitroprusside 5%, and a saturated solution of caustic soda).

The amount of formaldehyde present was probably greater, as according to a rough estimate made by Burman, the administration of 0.3 to 0.6 gramme of hexamine thrice daily will give a solution of about 1 in 5,000, or stronger of formaldehyde in the urine.

The urine was incubated at body temperature, and every 24 hours a culture was made, and the Rimini-Burman test applied.

I found that though formaldehyde was still present, giving the dark blue colour with a latter test, I was able to get a vigorous growth of the colon bacilli each day for a week, though perhaps the number of colonies grown from a single drop of urine was reduced towards the end of the week.

The urine was kept at body temperature for another week, and it showed no tendency to decompose, or putrefy, but still maintained its normal aromatic odour. This proves the beneficial effect of the administration of hexamine in urines which tend to get offensive very rapidly.

Classification of Gram-Negative Bacilli Found in Urines.

Number	Motility	Gelatine	Glucose	Mannite	Dulcite	Lactose	Sacchr.	Indol	Litmus	Milk	No. of Infections.	
(1)	—	—	AG	AG	AG	AG	AG	+	Acid	Clotted	14	*Bacillus coli*
(2)	†	—	AG	AG	AG	AG	AG	+	Acid	Clotted	6	*Bacillus coli*
(3)	—	—	AG	AG	—	AG	—	+	Acid	Clotted	9	*Bacillus acidi lactici* (Hüppe)
(4)	†	—	AG	AG	—	AG	—	+	Acid	Clotted	7	*Bacillus acidi lactici* (Hüppe)
(5)	—	—	AG	AG	AG	AG	—	+	Acid	Clotted	5	*Bacillus acidi lactici* (Hüppe)
(6)	†	—	AG	AG	AG	AG	—	+	Acid	Clotted	5	*Bacillus acidi lactici* (Hüppe)
(7)	—	—	AG	AG	AG	A	—	+	Acid	Clotted	1	
(8)	—	—	AG	AG	—	AG	AG	—	Acid	Clotted	7	*Bacillus lactis aerogenes*
(9)	‡	—	AG	AG	—	AG	AG	—	Acid	Clotted	1	
(10)	—	—	A	AG	A	A	A	—	Acid	Clotted	1	
(11)	—	—	A	AG	—	A	—	+	Acid	Clotted	2	
(12)	‡	—	A	AG	A	A	A	+	Acid	Clotted	1	
(13)	—	—	A	A	A	A	A	+	Acid	Clotted	1	
(14)	†	—	A	A	A	A	—	+	Acid	Partial Clotting	1	
(15)	—	—	A	A	—	A	A	+	Acid	Partial Clotting	2	
(16)	†	—	A	A	—	A	A	—	Acid	Clotted	1	
(17)	—	—	A	—	—	A	A	—	Acid	Partial Clotting	1	
(18)	—	—	A	—	—	—	—	—	Acid	Clotted	1	
(19)	—	—	A	—	—	—	A	—	Acid	No Clotting	1	
(20)	—	+	A	—	—	—	—	—	Alkaline	Peptonized	1	
(21)	†	+	AG	—	—	—	—	—	Alkaline	Peptonized	3	Bacillus of proteus type
(22)	†	+	—	—	—	—	—	—	Alkaline	Peptonized	1	
(23)	—	—	A	—	—	—	—	+	Alkaline	Peptonized	1	
(24)	‡	+	A	—	—	—	—	—	Alkaline	Peptonized	1	
(25)	†	—	—	—	—	—	—	—	Alkaline	Peptonized	1	*Bac. faecalis alcaligenes*

† = Motile.
‡ = Very Actively Motile.
+ = Liquefaction of Gelatin.
— = Non-Liquefaction of Gelatin.

A = Production of Acid Only.
AG = Production of Acid and Gas.
Combined Infections: (1), (4), (5); (2), (8); (2), (15); (8), (25); (14), (21); (15), (22).

Hexamethylenamine preparations, of which there is a great number on the market now, influence the urinary infection in only a small percentage of cases, and it is useless to continue the drug if positive results are not obtained in from ten to fifteen days. It is then advisable to give it at periodical intervals. Some patients taking hexamine suffer from digestive disturbances, and a few have irritation of the urinary tract. Hexamine itself is non-toxic, but it is the liberation of a high percentage of formaldehyde that gives rise to the latter symptoms. Some individuals have an idiosyncrasy for hexamine, and may develope these symptoms on as a small a dose as 0.15 gramme.

Kidd states that it is no good prescribing urotropine in a fluid mixture, for it decomposes at once. He recommends giving it in the form of 0.3 gramme tablets in plenty of water after meals, and continuing the drug for at least 6 months.

Martindale and Wescott state that hexamethylenetetramine is really a stable compound, and needs boiling with mineral acid to decompose it to any extent.

Experiments have demonstrated that the antiseptic power of hexamine in alkaline or neutral urines is almost nil, and that the antiseptic power rises rapidly as the acidity increases.

The degree of acidity in terms of total solids in the urine is obtained by taking the amount in cubic centimetres of decinormal soda, required to neutralize 10 c.cm. of urine, and dividing it by the number, beyond a thousand (1,000), in the specific gravity of the specimen, and multiplying by twenty (20). The urine is diluted ten times with distilled water before titration, and phenolphthalein is used as the indicator.

It is important to keep the acidity of the urine high, above four or five, or the hexamine will not act efficiently, a high acidity being of more importance than a large dose of hexamine.

Reports of Cases.

A CASE OF ACUTE FEBRILE POLYNEURITIS.[1]

By W. T. Hayward, C.M.G., LL.D. (Hon.), L.R.C.P.,
Consulting Physician, Adelaide Hospital.

While acting as Physician at the No. 2 Australian General Hospital in France, the following case came under my care:—Private G.R., aged 19, a bright, intelligent lad from Aberdeenshire, had had 16 months' service. Till about three months before enlisting he was apprenticed to a brass moulder; he had to give up this employment, owing to frequent gastric attacks. He had had no other illness. In August, 1916, he joined the Gordon Highlanders, came to France in April, 1917, and was in several engagements. He was transferred to the Machine Gun Corps three months ago. He had had no previous illness since he joined the Army.

On the evening of November 20, when in the line, he was seized with shivering, headache and pains in the limbs. On the following day, on rising to go to sick parade he collapsed. He said that his legs gave way under him; he could draw them up and move them in any direction, but had no power in his feet. He said that an orderly used to rub them. At first sensation was natural, but gradually it lessened, and finally he could not feel anything up to his knees. He had no intense pain at any time. The loss of power in the legs became more marked; by the third day it was complete. On that day he was unable to swallow solid food, and he noticed that his speech was affected. He also noticed that when he desired to micturate or defæcate there was a difficulty in starting, and, when effected, inability of control. On November 24 he was sent to a casualty clearing station, and on the 26th transferred to No. 2 Australian General Hospital, where he arrived about 11 p.m.

Early on November 27 I was hurriedly called, as the patient was said to be dying. While taking a drink of water he choked, gasped for breath, became livid and apparently nearly died. The attack passed off in about ten minutes.

On examination subsequently I found that his temperature was 37.2° C., and his pulse-rate 88. The face was very flushed. There was complete paralysis of the right side of his face; the left side remained unaffected. There was difficulty of deglutition and partial paralysis of the soft palate. The tongue was protruded in the mid-line. Articulation was imperfect, and phonation unaffected. There was some cough. His heart and lungs were normal. There was absolute paralysis of the lower limbs, and a condition of hypotonus was determined. His feet were dropped, and the toes pointed. There was no movement of either the toes or the ankles. The muscles of the calves were flaccid, but there was not that condition of tonelessness so noticeable in cases of myelitis. There was complete loss of all types of sensations from the toes to the lower third of the thighs, where there was a definite line of demarcation. Above this, up to the costal margin, the skin was hyperæsthetic. Krönig's sign was marked on both limbs, and rigidity of the head and neck pronounced. No reflexes, deep or superficial, were obtainable in either limb. The cremasteric and abdominal reflexes were present and apparently normal. There was great loss of power of the arms. He was unable to raise them from the bed. There was complete loss of sensation from the fingers to just below the elbows, diminished over the chest, but no trophic disturbances.

The mentality of the patient was wonderfully clear. He was able to give real assistance in determining the physical signs. In the evening the patient had another collapse; while drinking he became intensely cyanotic, and almost ceased to breathe. The Sister performed artificial respiration. After about a pint of fluid and mucus had been expressed, the breathing became easier, but the patient expressed the wish that the operation should be continued. Feeding by the mouth was ordered to be discontinued. There being considerable stiffness and retraction of the neck, Colonel Powell kindly performed lumbar puncture. Fifteen cubic centimetres of clear, limpid fluid were withdrawn under slight pressure. It contained neither organisms nor cells. The temperature was 37.2° C.; the pulse was dicrotic and its rate 84 beats in the minute.

November 28.—The patient had passed a fair night. He felt better, and was able to swallow a little fluid. The skin was more livid, and the cough troublesome. He had difficulty in raising expectoration, owing to paralysis of intercostal muscles. Diaphragmatic breathing was apparently unaffected. The paralytic signs were much as before, but the area of analgesia was extending slowly. He had control of his sphincters. The temperature was 37° C., and the pulse-rate 110.

November 29.—He was very restless during the early part of the night, but slept comfortably after the administration of 0.01 gm. of morphine sulphate. The skin was less livid. The cough was very troublesome, and the expectoration copious and difficult to expel. There was no difference in the condition of the arms; the previously hyperæsthetic area on the legs had become analgesic.

November 30.—There was no extension of the analgesia. The patient was able to expectorate more freely. The temperature was 37.4° C., and the pulse-rate 120.

December 1.—The patient had become very restless as the night had come on, but he slept comfortably after the injection of 0.008 gm. of morphine sulphate. The facial paralysis was less marked. He swallowed food well. The cough was still troublesome, and he still had difficulty with expectoration. The analgesia in the forearms had decidedly decreased. He could distinguish between the touch of the finger and that of cotton wool. The hyperæsthetic area was reduced to a segment just above the pubes. Sensation was returning in the legs, and he was able to localize the position of the

[1] Read at a Meeting of the South Australian Branch of the British Medical Association on May 30, 1918.

touch of the finger on either leg. Thermal impressions were accurate. There was the faintest sign of voluntary movement in the left big toe.

December 3.—Power was returning in the arms and legs.

December 5.—The toes were hyperæsthetic. The facial paralysis was passing off. He was able to raise his arms.

December 7.—He complained of pain on moving his left great toe. The temperature was 37.4° C..

December 8.—He could draw up both legs, but had great pain on extreme flexion.

December 13.—Power had gradually returned in both extremities. He was able to sit up in bed and to write his name with a little difficulty. He could move his legs in any direction, but there was still pain on extreme flexion. The facial paralysis had disappeared. There was still some stiffness in the back. The deep reflexes could be elicited to a very slight extent. The plantar reflexes were absent.

December 18.—He could almost stand without support. His back was more supple. His general health was excellent, and his temperature normal. He had written a letter.

December 21.—The patient got out of his bed and stood upright without any assistance. A faint plantar reflex was elicited, but the patellar reflex was absent.

December 30.—In a letter I received from him he stated that he was getting about, but that his legs and arms were still weak. His general health was very good.

Remarks.

I experienced great difficulty in making a diagnosis in this case, as it presented features differing from any form of paralysis that I could remember to have seen, symptoms that seemed to point to myelitic disease and others to a peripheral origin. It was also necessary to exclude the possibility of it being one of cerebro-spinal meningitis or acute poliomyelitis. Fortunately, on December 1, Colonel Gordon Holmes, the Consulting Neurological Physician to the Forces, visited the Hospital, and I obtained his assistance. He immediately pronounced it to be a case of acute febrile polyneuritis—a type of disease that had been forcibly brought under his notice during the war, and which he had described in a contribution to the *British Medical Journal* of July 14, 1917. I understand that Sir Rose Bradford has also written on the subject. I have since read Colonel Holmes' paper, and regret that I had not done so earlier. Had I, I should not have been a moment in doubt, for his lucid description of cases of this disease tallies exactly with the phenomena of the one that I am recording. It may be interesting to some if I give the salient features of acute febrile polyneuritis, as described by Colonel Holmes:—

Onset of Illness.—Usually rapid, beginning with general malaise and fever, the temperature varying from 38.8° to 39.6° C.. Pains in the legs and lower part of the back setting in on the second or third day, and persisting, followed by weakness of the legs and difficulty in walking. These symptoms may occur at the commencement of the illness. The paresis increases rapidly, the arms become similarly, but less severely, affected. Facial paralysis and difficulty in swallowing. When the disease is fully developed, the lower limbs, which are equally affected, are flabby and toneless. Muscular atrophy is not pronounced in any stage of the illness. There may be no power of movement of either toes or ankles, though, in most cases, the patient can with effort move the thighs in any direction, but the range is small and feeble. The affection of the arms is less severe, and the muscles of the trunk still less, though the interossei and abdominal muscles are weaker than normal. The diaphragm has not been involved in the cases so far seen. The face is invariably affected; not so the tongue, but most patients have difficulty in swallowing solid food. The pupils and their reactions are normal, but diplopia sometimes occurs. The deep reflexes of the arm, knee and ankle are absent. The superficial, abdominal and cremasteric reflexes are usually obtained, but the plantar are absent when the lower limbs are severely affected. Sensory symptoms are less pronounced than motor disturbances, and pain is comparatively slight on compression of nerves and muscles. There is usually very little disturbance in the various forms of sensation. A certain amount of hyperæsthesia is occasionally present. While disturbance of the functions of the sphincters is constant, vaso-motor, trophic and secretory disturbances are absent. The mental state is never affected. General intelligence, memory and power of attention are intact. No albumin or sugar is found in the urine. No complications follow.

Course of Illness.—The symptoms reach their maximum within a week or so. A characteristic feature is the rapid improvement and early recovery of those patients who survived.

Pathology.—In the two fatal cases, where post-mortem examinations were made, the sciatic nerve showed signs of degeneration; the spinal roots were unaffected. No evidence of inflammation, congestion or infiltration by any type of cells could be found in either the spinal cord or cerebral cortex, but in the ventral horn certain alterations were visible, similar to those found in other forms of peripheral neuritis.

I am indebted to the Officer Commanding the Second Australian General Hospital, Colonel A. H. Powell, C.M.G., for permission to publish this case, and to him, Colonel Gordon Holmes and Major Rawdon White for kindly advice and assistance.

References.

"Acute Febrile Polyneuritis," by Gordon Holmes, *British Medical Journal*, July 14, 1917.

Reviews.

CANCER OF THE SKIN.

"The Influence of Sunlight in the Production of Cancer of the Skin," by C. Norman Paul, of Sydney,[1] fills a gap usually passed over in a very cursory manner in books published on dermatology. Dr. Paul has stepped into the breach and given us the result of much careful observation and extensive knowledge in the origin and course of certain skin lesions produced by the ill-effects of the actinic rays of the sun on exposed cuticle of the white races in the Southern Hemisphere, particularly Australia. These lesions have been very real to all Australian dermatologists, and the author spares no pains in giving a concise, yet full, description of the lesions as they appear and their methods of advance as the transformation goes on from the pigment spot, keratosis or warty growth to the rodent ulcer or epithelioma. The book is well-illustrated with 44 plates in black and white, with several good microphotographs of sections to supplement the description of the histology given.

There is a chapter on *xeroderma pigmentosa* and its course, to contrast it with the lesions produced by the constant action of the sun's rays on the pigment arrangement of the skin which leads to cancer formation.

Rodent ulcer is well dealt with—its origin, histology and treatment. *Dermatitis solaris chronica*, due to the prolonged action of the sun's rays on exposed surfaces so often seen in senile skins, is well described, and microscopical appearance explained, as well as means of avoidance and treatment.

Cutaneous horns, multiple rodent ulcers and *epithelioma adenoides cysticum* (Brooke) are described; ætiology, histology, prognosis and treatment are given. Tropical skin affections are dealt with, and epithelioma is well gone into, along with a differential diagnosis between it and many other skin lesions.

This little work is a great addition to dermatological literature, and the author is to be complimented upon it. The type and illustrations are good. Dr. Paul's vast experience in the treatment of these skin lesions has led him to the conclusion that radium is the best treatment to employ, whilst CO_2 snow, X-rays or the knife may be employed, the more lasting and better cosmetic effect is produced when careful filtering of the radium rays are scientifically carried out.

[1] The Influence of Sunlight in the Production of Cancer of the Skin, by C. Norman Paul, M.B., Ch.M.; 1918. London: H. K. Lewis & Co., Ltd.; Crown 4to., pp. 57, with 44 illustrations. Price, 10s. 6d. net.

We have been informed that a rumour has been circulated to the effect that there is a shortage of supplies of Horlick's Malted Milk in the Commonwealth. On enquiry, we learn that this rumour is entirely without foundation, and that the agents in the various cities in Australasia are in a position to supply the public now and for a considerable time to come.

The Medical Journal of Australia.

SATURDAY, JULY 13, 1918.

The Use of Gas in Warfare.

Hitherto the information concerning the chemistry and methods of employment of poisonous gases in the war has been limited to a few generalized and largely unscientific descriptions of individual attacks. When gas was first used by the Germans it was assumed that the constituents relied on were bromine and chlorine. From more recent records it has been clear that phosgene gas has played an important part. Quite recently the accounts include references to "mustard gas." *The Journal of Industrial and Engineering Chemistry* has recently reproduced a lecture delivered by S. J. M. Auld, a member of the British Military Mission, to the Washington Academy of Sciences in January of this year on the methods of gas warfare. From this lecture exact information concerning the uses of poisonous gases becomes available. It is pointed out that the information given has reference exclusively to the vapours and methods employed by the Germans. The writer refers from time to time to the means of protection in use in the British and French lines. He goes so far as to express the opinion that "the side that can first force the other to use oxygen respirators for protection has probably won the war." This sentence, as well as many others, indicate that the Allies, having been compelled to reply to Germany's barbarous effort to achieve victory by disregarding the rules of the game, have long since exercised ingenuity in the search for a vapour which is colourless, odourless and invisible, as well as intensely toxic. The war has thus become quite different from all other wars, and, to a certain extent, it is being fought in the chemical laboratories.

In April, 1915, the Germans made the first gas attack. They used gas cylinders and directed the gas over the top of the parapet through lead pipes. Chlorine was used. This is a heavy vapour, is easily compressible and is relatively toxic. The gas mixed with air forms clouds, and at this stage, cloud formation was found to be serviceable. After the surprise of the attack was over, means of protection were sought, and it was soon found that cotton wool covered with muslin and soaked in sodium carbonate and thiosulphate sufficed to render this gas cloud ineffectual. The only casualties that occurred when proper masks were provided were due to carelessness on the part of the men. Later in 1915 the chlorine was discarded to a large extent in favour of carbonyl chloride or phosgene. This substance, as is well known, is a deadly poison, and acts as a respiratory irritant, as well as a hæmoglobin and nerve tissue poison. The concentration met with probably did not exceed one part in 10,000. To meet the danger of an atmosphere containing this concentration of phosgene, a mask or helmet saturated with a solution of sodium phenate proved adequate. In December the tactics were changed by an increase in concentration and by the introduction of new materials. Night and early morning gas attacks became common, and a repetition of the attack often found victims in men who, after the gas had cleared off, had discarded their gas helmets with a feeling of security. During the following six months these tactics were pursued by the enemy with greater or less success, until the last cylinder gas attack was delivered against our troops in August, 1916. By this time the defence was strengthened by the adoption of a Russian suggestion for neutralizing phosgene. It was found that hexamethylentetramine was capable of reacting very rapidly with phosgene, and this substance, used in conjunction with sodium phenate, proved itself to be an ample safeguard against a concentration of one in 1,000.

The Germans then started using gas shells, and from that time up to the time Auld left the front a considerable variety of substances have been included in these shells. The first substance was xylyl bromide. The shells containing this substance were called "tear" shells, on account of the lachrymation induced by the vapour. Next trichloromethyl-chloroformate was used, but this did not prove very damaging. Palite, the mono-chlor compound, was also employed, as were bromo-ketone, chloro-acetone, nitro-trichloromethane, diphenyl - chloro - arsine, dichloro - methyl ether, benzyl bromide, and other nearly related com-

pounds. While the toxicology of these substances has not been studied, it is quite obvious from their chemical constitution that the effect of the introduction of the vapours into the atmosphere is to render the air practically irrespirable. From the military point of view, this means a putting out of action of all men within the affected area until they have adjusted their masks, and possibly for some time after. The men exposed to these gases are unfitted for immediate energetic action, often vomit, even inside their helmets, and may be more or less severely attacked by the absorbed poison. It must also be recognized that the gases will penetrate places protected from the direct effect of shell and other fire, in dug-outs and behind the parapet of a trench. The gases have to be absorbed or chemically bound in the masks, if the men are to escape the immediate irritating effects and the ultimate poisoning. The means employed to neutralize or absorb one gas may fail when others are used, and in this way the change of substance necessarily means a temporary advantage. Several of the substances named have a distinct poisonous effect. Methane, the ketones and carbylamine are protoplasmic poisons, and may act directly on the endothelial cells of the arterioles and capillaries. Some appear to exert a direct action on nerve tissue. None, however, can compare with phosgene from the point of view of being a deadly poison. It is thus seen that the so-called lachrymation shells were used primarily to incapacitate the men for the moment, and that the actually injurious effect was regarded as a desirable, but not essential, secondary effect. Anæsthetic action has been noted after exposure to the vapours from some of the gas shells. The third stage of the employment of gas was a simultaneous irritation and poisoning by what has been termed "mustard gas." This substance is a sulphide of di-chloro-diethyl. Apparently it has a considerable affinity for mucous epithelium, for the immediate effects are very slight, while, after the lapse of several hours, the signs of vesiculation appear. The eyelids and conjunctivæ swell and blisters form; the mucous membrane of the nasal passages and of the respiratory tract become irritated and greatly swollen. Nasal discharge, acute pain, severe coughing, and even vomiting, are among the symptoms. The substance is a fluid, and leaves the exploding shell in the form of a fine spray. The unbroken skin blisters when the spray reaches it, while the vapour may penetrate the clothing and thus cause annoyance. The substance is not of great importance, since the lung effects can be guarded against by respirators, while the eye irritations soon heal and the skin effects are not serious.

At one time the soldiers feared that the Germans might employ hydrocyanic acid gas. Measures were adopted to meet such an attack. It appears, however, that the enemy was little inclined to replace phosgene by prussic acid. Probably the latter would be more difficult to handle, and would be less effective as a damaging factor, because its neutralization is easier than that of phosgene. Other substances have been suggested by various people, usually without due regard to the conditions in which the gases have to be employed. Arseniuretted hydrogen is one of the most deadly gases known, and this substance could be included in shells or hand grenades. It is very doubtful whether the compound would withstand the effect of the explosion of the shell. Nickel carbonyl is far more insidious, and it has been suggested that this substance could be employed in warfare. Anyone who handled this substance will realize at once that dissociation into carbon monoxide and metallic nickel takes place with considerable suddenness under slight provocation. The valuable nickel would be wasted, and the small amount of carbon monoxide would do but little harm. It may therefore be stated that the majority of the newer vapours used harass the men and produce toxic effects in some cases as long as they remain new. Phosgene remains the most dangerous gas employed.

THE RELIABILITY OF LABORATORY TESTS.

In April of last year the Medical Research Committee appointed a committee for the purpose of considering how far it might be practicable and desirable to introduce a standardization of routine pathological methods. The members invited to undertake this task were Dr. J. G. Adami, F.R.S., Dr. F. W. Andrewes, F.R.S., and Professor William Bulloch, F.R.S. This committee turned their attention in the first place to the Wassermann test, and sought the collaboration of an expert of high standing, Lieutenant-Colonel L. W.

Harrison, D.S.O. An interim report was issued on November 13, 1917, and this report has been published in pamphlet form, bearing the date of March 1, 1918. The report is a valuable expression of opinion, and should be carefully considered by all responsible pathologists, with the view to the adoption of the recommendations contained therein. It is unfortunate that seven months were allowed to elapse between the appointment of the committee and the issuing of the report, which does not represent the results of any fresh investigations, but rather a critical review of past researches, and that a further five months should have been wasted before the publication of the report. The ostensible purpose of the report is to suggest that four methods of performing the Wassermann test should be regarded as standard methods for all military and public health work. This recommendation has been made by the Pathological Sub-Committee of the Royal Society of Medicine as long ago as December, 1914, with the one difference that one standard method alone was to be recognized, namely, the original method of Wassermann. Apparently the Committee would have adopted this sensible view had it not been for the fear that a restriction of the test to one method might have the effect of discouraging workers from endeavouring to improve the methods in use. It will be noted on careful perusal of the report that the first method selected is that described in detail by Lieutenant-Colonel Harrison in D'Arcy Power and Keogh Murphy's "System of Syphilis," and that the three variants are largely concessions to the views of McIntosh and Fildes, Browning and R. Donald, made to gratify individual members of the Committee. The Committee have no doubt concerning the advantage to be gained by adopting the original Wassermann technique as a standard method, so that in all official reports, no matter where the tests have been carried out, a comparison with other results can be drawn. There is nothing to prevent bacteriologists from utilizing other methods in addition to the one described by Harrison. In this way greater reliance can be placed on the results obtained and the value of the test as a trustworthy means of diagnosis will be more widely recognized.

The Committee have called attention to the responsibility which rests with the bacteriologist performing this test. The results of a false diagnosis of syphilis are so serious to the patient that the diagnosis should never be made without reasonable certainty. In this connexion the Committee express the view most deliberately that the preparation for the tests, their performance and the reports based upon them, should not be left to laboratory assistants, no matter how highly trained, but should be the actual work of the responsible medical officer in charge. "In no circumstances should the reputation of the pathologist in charge be used as a 'cover' for the work of an assistant." With this view everyone must be in complete agreement. Long ago the General Medical Council in the United Kingdom determined that a medical practitioner should not employ unregistered assistants and allow them to conduct part of their practice. Many names have been removed from the medical registers for this offence of covering. The medical practitioner accepts payment for his services, which the patient believes to be skilled. If a person who has not had the long training of a medical practitioner, and who has not satisfied the authorities that he possesses knowledge and skill necessary for the proper care of sick persons, has carried out the tasks entrusted to the medical practitioner, the latter is guilty of a fraud in being party to the deception and in accepting fees for the work he has not performed himself. In precisely the same way, if the bacteriologist who undertakes to carry out a laboratory test on which a diagnosis may be based, allows a person without full medical knowledge and without the responsibilities attaching to the office of a pathologist, to carry out part of these tests, he renders himself party to a deception, and should be dealt with as a practitioner guilty of covering an unregistered person.

The results of diagnostic tests carried out in the laboratory can be rendered more reliable if the bacteriologist in charge sets out the method employed in the performance of the test, and especially if this method be the one selected by a representative committee, such as the Medical Research Committee, and if the signature appended to his report can be accepted as a guarantee that he has personally carried out, or superintended the carrying out of, the individual steps of the tests.

DIETARIES OF MUNITION WORKERS.

An inquiry into the composition of dietaries, with special reference to the dietaries of munition workers, has been made by Viscount Dunluce and Captain Major Greenwood, of the Welfare and Health Section of the Ministry of Munitions of the United Kingdom and Ireland. A preliminary account[1] of the inquiry and of the authors' conclusions from the data is published by the Medical Research Committee. The inquiry was undertaken originally to ascertain how much food was consumed by representative groups of munition workers during the summer of the year 1917. The scope has been extended to a consideration of the adequacy of the amount and of the kind of food taken by those at work in factories for making munitions. The data have been obtained from 21 hostels supplying meals daily to 19,200 men. The "man values" of the dietaries are based on the scale advocated by Atwater and Bryant and adopted by the Food Committee of the Royal Society of London. In this scale the amount consumed by a woman over 16 years of age is assumed to be four-fifths of what is eaten by a man. A return was made of the food purchased by each hostel during a specified period of a week or month. An allowance was made for stock on hand at the beginning and end of this period. Care was exercised in determining accurately the number of persons to whom the food was supplied. The composition of the food was calculated with the aid of the values of the Food Committee of the Royal Society.

The data show that the material purchased daily for each man's diet contained 115 gm. proteins, 141 gm. fats and 408 gm. carbohydrates, yielding energy equivalent to 3,463 calories. The averaged amount of bread was 276 gm., or 9¾ oz. Imperial, and the proportion of cereals in the dietaries amounted to 36.7%. A careful analysis was made of the principal articles of food consumed in a large hostel supplying more than 7,000 persons with meals daily. About a thousand and fifty calories were derived from bread, 550 calories from meat, 300 calories each from milk and margarine, 250 calories from sugar, 150 calories from bacon and biscuits, and 100 calories each from ham, sausages, jam, flour and oatmeal in each day's ration. In the consideration of these figures, it may be noted that the shortage of potatoes was so acute that these did not appear in the rations, that sugar was scarce and that there was at the time of this investigation an energetic campaign urging the public to "eat less bread." The effect of this exhortation to economy was most obvious in hostels inhabited by women alone. In general, the consumption of carbohydrates is low, and is reflected in the increased use of fats and, to a less extent, of proteins. The wastage of food purchased but not eaten is usually reckoned at 10%, but it may be higher when fats form a larger proportion than usual in the ration.

The diets of the munition workers may be compared with those of workers before the war. The figures of Rowntree, reporting the experience of families in Yorkshire in 1900, those of the Board of Trade, collected in 1904, and those obtained by Miss Ferguson in Glasgow in 1911, may be employed for this purpose. Rowntree showed that a series of families, supported by earnings of less than 26 shillings a week (average, 18 shillings), received 82 gm. proteins, 88 gm. fats and 450 gm. carbohydrates per "man value," with a caloric energy of 3,000 units, that families subsisting on 33 shillings a week received 116 gm., 130 gm. fats and 590 gm. carbohydrates, with a caloric value of 4,100 units per man value, and families with high incomes purchased 112 gm. proteins, 161 gm. fats and 510 gm. carbohydrates, with a fuel energy of 4,050 calories per man value. The Board of Trade figures are similar. Miss Ferguson found that the food eaten (not purchased) in 40 families contained 110 gm. proteins, and yielded 3,163 calories.

Physiological studies upon dietetics aiming at establishing the daily requirements of the human organism are limited to those of German and American investigators. Standard dietaries have been laid down as the result of these statistical and experimental studies. These dietaries vary with the amount of manual work performed. The more mechanical work produced, the greater is the fuel value of the ration prescribed. In general, it may be assumed that these standard diets represent the average consumption of workers in the countries for which they are established. Voit laid down a diet of 118 gm. proteins, 56 gm. fats and 500 gm. carbohydrates for Germans as a result of his statistical and calorimetric labours, while Atwater, after much experiment, prescribed 125 gm. proteins, 125 gm. fats and 400 gm. carbohydrates for Americans. Atwater's standard diet contains 8% more energy than that of Voit, and differs in containing much more fat. In determining the needs of the body at work, attention has been directed to two problems. The quantity of energy transformed by a man of assigned weight, when absolutely at rest, has been measured, and attempts have been made to find the further quantity of energy transformed when a man does a definite amount of muscular work. With regard to the requirements of the body at rest, there is general agreement that a man sleeping quietly uses one calorie per kilogram body weight per hour. The amount varies with the external temperature and the movement of the atmosphere. While a man weighing 70 kilos. requires some 1,650 calories at room temperature while asleep and about 20% more, or 2,000 calories, while awake at rest, the needs of the body at work are less accurately known. It is known with respect to a man pedalling a bicycle that the extra work performed above any definite minimum necessitates an expenditure of 3.5 calories for every calorie liberated as mechanical work. It has also been discovered that a man working at the rate of 21 calories per hour liberates in his body 290 calories of heat. At present, it is not possible to approach more nearly the requirements of the body at work. As heavy work is done, extra food, in the proportion of four times that yielding the mechanical energy as heat, must be consumed to replace loss.

The investigations of Rubner and others have shown that there is no basis for the view previously held, that the body needs some fixed quantity of protein. It would appear that the requirement of protein by

[1] *Medical Research Committee, National Health Insurance*, Special Report Series, No. 13, December 7, 1917.

the animal organism is proportional to the amount of energy needed. Investigation shows that the amount of energy obtained from the protein consumed must not be less than 6% of the total consumption of energy. The greater the amount of mechanical work performed, the greater must be the weight of protein in the diet if the body is to remain in equilibrium.

If we examine the dietaries of the munition workers in the light of these various standards, it is obvious that the rations supplied in the hostels contain a sufficiency of calories, and that there is an ample surplus of proteins. It is of interest to note how the daily ration was apportioned by the average worker. Four meals containing respectively 1,021, 973, 603 and 1,097 calories were eaten. The hours at which these meals were taken averaged 7 a.m., noon, 4.30 p.m. and 8 p.m. The first and last meals were thus the principal meals. It will be noted that the practice of eating four meals, with a heavy breakfast and supper, differs markedly from the practice of the Australian workman.

ANCHYLOSTOMIASIS IN PAPUA.

Dr. J. H. Waite, of the International Health Board of the Rockefeller Foundation, published on September 15, 1917, in the columns of this journal a preliminary report on anchylostomiasis in Papua. The survey undertaken was begun in June, and, in the course of three months, no less than 1,130 native men, 60 native women and children and 16 white men were examined with the view to the determination of the extent of hookworm infestation. We have recently received Dr. Waite's full survey report, a fascinating publication, which covers a wide field and contains a vast amount of interesting and important information. Dr. Waite is to be congratulated on an eminently complete and valuable research, on the achievement of what he set out to discover, on his remarkable diligence and rapid working and on his contribution toward the foundation of a real hygiene in a country hitherto devoid of all traces of a "sanitary conscience." The Foundation is to be congratulated on a very artistic publication, and on its exhibition of wisdom in supporting Dr. Waite's demand for health reforms in a way that must appeal to the lay mind.

The report contains an excellent description of the history, topography, geology, climatology, fauna and flora, resources and population of Papua. This part serves an admirable purpose in introducing the reader in a pleasant manner to the scene of the story and to the *dramatis personæ*. In the second part, Dr. Waite deals in some detail with the public health administration from the year 1888, when Sir William MacGregor, M.D., was appointed the first Governor of Papua, up to the present day. Much of this information has been collected by Dr. A. Breinl, the Director of the Australian Institute of Tropical Medicine at Townsville. The high incidence of dysentery, tropical ulcer and venereal disease, as well as of malaria and beri-beri, constitutes a grave indication for the institution of a modern form of hygiene, adapted to the special conditions obtaining in Papua. The difficulties to be overcome before the white man, as well as the native, can be protected to some extent against the many inherent dangers are numerous, but, notwithstanding the paucity of medical men in the colony, the proposals of Dr. Waite, if properly carried out, should lead to a vast improvement in the health of the population. We learn that treatment of hookworm infestation is being carried out vigorously, and that the natives on the plantations are being taught how to prevent the spread of intestinal infections.

The third part of this volume contains a complete account of the anchylostomiasis survey. It is unnecessary to repeat the details in this place, since they have been given on the basis of a substantial investigation in Dr. Waite's preliminary report. The survey revealed in a most striking manner that the hookworm has not yet reached the native in the village, but is still concentrating its attention to the natives in the plantations. The time is therefore ripe for an energetic endeavour to clear the worm out of the plantations, and thus save the villages from the danger that threatens them. This object can only be attained by the detection of every infestation, the treatment until a cure is secured of every individual whose stools contain anchylostoma eggs, the establishment of properly constructed field latrines, the education of the natives concerning the danger of soil pollution and the institution of a permanent health service. We learn that Dr. Waite is now carrying out similar good work in North Queensland.

ORTHOPÆDIC SURGERY AND MORPHOLOGY.

In the present issue two fresh departments are introduced into that portion of this journal which is devoted to short abstracts from articles appearing in other scientific publications. The subjects dealt with are (1) orthopædic surgery, including the surgery of the maimed in war, and (2) morphology, including human and comparative anatomy. The first subject is so popular at the present moment that no justification for the innovation will be needed. The second subject has been introduced because of its great scientific value to the medical profession. Unless medical practitioners are prepared to investigate the genesis of the tissues which undergo changes in pathological conditions, the true nature of these changes may be misunderstood, and the rational method of applying remedies may be neglected. The selection of the articles for treatment and the preparation of the summaries have been undertaken by capable experts, to whom we are under an obligation. In commending these abstracts to our readers, we feel convinced that this innovation will be found to be of considerable practical value.

Corrigendum.

In the report of the discussion on Dr. Lambert's paper on spinal bone graft, which was published in *The Medical Journal of Australia* of June 29, 1918, page 540, the remarks attributed to Dr. H. L. Murray were made by Mr. Hamilton Russell.

Abstracts from Current Medical Literature.

ORTHOPÆDIC SURGERY.

(9) Reconstructive Surgery in War Time.

The principles of reconstructive surgery are the same as in civil orthopædics, but the details are radically altered by sepsis, scar tissue, the widespread crippling, and the mental and moral tax on the already war weary soldier (F. C. Kidner, *Journ. Amer. Med. Assoc.*, May 4, 1918). In septic fractures stress is laid on fixation, correct alignment and drainage. Carrel's technique in sepsis is useful, but not infallible. For fixation in fractures in limbs the adapted Thomas's knee splint is used. Badly united fractures, if seen early, are treated by the correct application of splints and extension; if seen late, by thorough breaking-up of the vicious union at operation, followed by extension. In ununited fractures absolute immobilization is the keynote; in great destruction of bone transplantation is advocated. In discussing joint injuries the author says that primary excision sometimes gives useful results, but not as good as incision and draining. The treatment of stiff joints depends on the cause. When due to adhesions they should be dealt with by the continuous application of force or repeated manipulations under anæsthesia, with fixation in the altered position. In stiffness due to injury of the soft parts, gradual stretching is the only practical method. When due to nerve injury with trophic changes, deformities are prevented and muscular power preserved. In nerve injuries the formation of connective tissue presents the greatest difficulty. Scars interfering with movement should be removed. It is essential that the surgeon should assure himself that there is no latent sepsis in operating on nerves and bones. The best plan in nerve lesions is to wait till the primary wound has healed, then to excise scar tissue and to define the nerve ends. The wound is then closed for ten days, and, if no sepsis appears, suture is performed. In bone lesions the primary wound should be allowed to close and the scar should be softened and mobilized by massage. Operation to prepare the bone field is then undertaken; the wound is closed for ten days before the operation is completed. In complete lesions of nerves the muscles and joints should receive attention, to prevent deformity. The suturing of nerves is encouraging, but success depends on early operation and careful after-treatment.

(10) Results of a New Operation for Obstetric Paralysis.

James Warren Sever (*Amer. Journ. Orthopedic Surg.*, April, 1918) attempts to overcome the persistent contracture of the adductors and medial rotators of the humerus by a new method. The operation consists in opening from the acromion process to below the insertion of the *pectoralis major*. The tendon of this muscle is defined, divided and retracted medially. The arm is then abducted and laterally rotated. The *subscapularis*, which still limits rotation, should next be defined and divided. The author passes some blunt instrument under the tendon as a guide during section. It is of the utmost importance that the shoulder-joint should not be opened. If subluxation of the head of the humerus be present, osteotomy of the acromion process is advised and the distal fragment tilted upwards or removed, to allow the humeral head to slip back into the glenoid cavity. A wire splint is used to hold the upper limb abducted above the level of the shoulder and rotated laterally with the hand in supination. This is worn for six months. The benefits of the operation are stated to be ability to perform free lateral rotation, a return of supination and an opportunity for the stretched and unused muscles to recover. The best results are obtained when massage and movements are used as a preliminary, and each case should have at least one year of such treatment before operation is advised. The presence of some power in the deltoid and the *supra-spinatus* is also necessary for the result. The operation should not be undertaken until the child is three years of age. The author states that the results so far, that is, after a lapse of twelve months, are permanent.

(11) The Tubercle of the Tibia.

F. G. Hodgson records some observations on the normal development and pathology of the tubercle of the tibia (*Amer. Journ. Orthoped. Surg.*, February, 1918). The author found that radiographic appearances of cases reported as fractures, avulsion or starting of the tibial tubercle in no way differed from the normal appearances in adolescence as observed by him. He examined a large number of radiograms of knees in children and young adults, and, in addition, had normal individuals between the ages of seven and twenty examined. The following are his conclusions: (1) No separate centre of ossification of the tubercle of the tibia was found under ten years of age. (2) The centre appeared earlier in girls than in boys. (3) It may appear earlier and more developed in one tibia than in the other. (4) In some there was no separate centre for the tubercle. (5) Some normal cases had the appearance of fracture avulsion or erosion. (6) The centre for the tubercle begins to unite with the tibia about the fourteenth and fifteenth years, and is firmly united at eighteen years. A number of excellent plates of the normal appearances illustrate the article. In considering the disease of the tubercle of the tibia, usually known as Schlatter's disease, the clinical history and physical examination should be compared with the radiographic findings. It has to be distinguished from acute osteomyelitis, tuberculosis of the tubercle, bone cyst and prætibial bursitis. The treatment consists of strapping the affected part and avoiding causes of trauma, such as rough games.

(12) The Nutrition and Vitality of the Tendon in Tendon Transplantation.

Arthur Steindler (*Amer. Journ. Orthop. Surg.*, February, 1918) says the failure of tendon transplantations has been due to the use of mechanical principles to the exclusion of physiological and biological factors. In reviewing his own work, he had to admit 75% of failures, and in re-opening two cases of peroneal transplantation he found that the tendons had been transformed into fine and insignificant bundles of fibres. In contrast to these, the tendons of the paralysed muscles were smooth, and looked healthy. The author contends that failures in transplantation are due to the methods of handling the tendons, and he lays down two important points: (1) The reconstruction of the gliding mechanism, and (2) the preservation of the mesotendineum as the nutritional basis of the tendon. The usual stripping of the tendon and tearing of the mesotendineal fold invites failure, due to degeneration, as the other sources of blood supply in tendons are negligible, but, on the other hand, the preservation of the mesotendineum restricts the displacement of the tendon, and, consequently, the scope of the operation. Details are given of the operative problems presented by the substitution of the *tibialis anterior* by the *extensor hallucis*, of the *tendo calcaneus* (*Achillis*) by the peronei and of a combination of these in *calcaneo valgus*. The method of anchoring the transplanted tendon is to stitch to the periosteum with strong catgut and to the paralysed tendon with fine catgut for a distance of five or six centimetres. The routine after-treatment adopted by the writer is to apply a plaster of Paris casing for two to four weeks. This is followed by splinting, massage and training of the transplanted muscles, and the results of this method are stated to be uniformly good.

(13) Diagnosis and Treatment of Hip-Joint Disease.

James K. Young (*Amer. Journ. Orthopaedic Surg.*, March, 1918) discusses the diagnosis and treatment of tubercular coxitis. He makes a special feature of the differential diagnosis, and distinguishes the disease from non-tubercular synovitis and arthritis, syphilitic arthritis, tuberculosis of the fifth lumbar vertebra, chronic osteomyelitis of the femur, sacro-iliac disease, Still's disease, infective arthritis, malignant disease, congenital dislocation and appendicitis. The author states that too much reliance should not be placed on X-ray examination, which, however, affords information as to the locality and extent of the lesion. Clinical examination and laboratory tests are more important. The possible occurence of intermittent hip disease is discussed. He divides the treatment

into two stages: (1) The period of fixation, and (2) the period for use of a convalescing hip splint. Details are given of the splints for each stage, and he promotes the patient to the convalescing splint, in which walking is allowed, when all symptoms have disappeared and X-ray examination shows the deposition of calcium salts. He mentions hygienic surroundings, tonics, and an especially rich diet of protein, carbo-hydrates and hydrocarbons as requisites in the treatment.

MORPHOLOGY.

(13) Thyroid Removal in the Larvæ of Rana Pipiens.

In the *Journal of Experimental Zoology* (Vol. 24, No. 3, of January 5, 1918) there is a series of papers by B. M. Allen, G. S. Terry and J. B. Rogers, dealing with the effect of removal of the thyroid *Anlage* at its very inception in tadpoles of 6 to 7 mm. in length. The results noted are very striking, and have an important bearing on the development of the animal. They indicate certain changes that might also be expected to occur in reptiles, birds and mammals, in which it is difficult or impossible to accomplish a similar operation. Allen finds that absence of the thyroid element does not affect the course of early development up to the time when the hind limbs begin to grow, *i.e.*, at about three months, but after this any further differentiation of the soma ceases, and the usual metamorphosis does not occur. Instead, the animal retains its primitive tadpole form, and increases in size to an abnormal degree. The hind limbs may develope in a rudimentary fashion, but the fore limbs not at all. The alimentary tract retains its simple larval form, in marked contrast to the complex development of the adult frog, and the brain growth is markedly retarded. No effect of any kind was noted as regards the gonads and germ cells, which continued their normal growth, even to full sexual maturity. A very interesting feature is that thyroid feeding will bring about resumption of development, even four months after all normal growth has ceased. Terry deals with the effects on the skeleton, and finds that, although calcification of cartilage does go on, there is an extreme retardation of the process of ossification in general. The vertebræ increase in size concomitant with the exaggerated growth of the tadpole, but they retain their primitive characteristics. In the limbs ossification, as well as growth, is greatly retarded in the hind limbs, or even stopped, as in the case of the fore limb elements. Rogers deals with the effect on the thymus and pituitary glands. He finds that the thymus remains larger than in the sexually mature frog; it does not degenerate, and does not migrate. The pituitary gland continues to develope, and the anterior lobe reaches a much larger size in the thyroidless tadpoles than in the controls.

(14) The History of the Eye Muscles.

The eye muscles, like the eyes with which they are so intimately associated, appear in the lowest vertebrates in essentially the same form as in man, and comparative anatomy has thrown very little light on their probable phylogenesis. H. V. Neal (*Journ. Morphology*, March 20, 1918) discusses the subject, and adds some observations derived from a study of embryonic and larval stages of amphioxus, cyclostomes and elasmobranchs. From this it appears correct to assert that the eye muscles are a remnant of the lateral trunk muscles, which, in the ancestors of vertebrates, extended in an unbroken series throughout the entire length of the body. Of the parietal muscles anterior to the ear they alone have persisted through their functional relations to the eyeball. Their isolation is associated with the growth and enlargement of the otic capsules and of the cranial skeleton. Primarily, as in amphioxus, the three anterior myotomes were members of the unbroken line of somatic musculature. When lateral line organs and enlarged cranial ganglia appeared they became split up into dorsal and ventral moities. Further displacement followed, with the enlargement of the optic and otic vesicles. Thus two sets of muscles came to be isolated and brought into functional relationship with the optic vesicles. A study of elasmobranchs shows how these two sets became transformed into the eye muscles. Each moiety of the first myotome again divides and from these four segments the four muscles innervated by the oculo-motor nerve are developed. The dorsal portion of the second myotome becomes the superior oblique, while its ventral part fuses with that of the third myotome, to form the lateral rectus muscle. The dorsal part of the third myotome and the complete somites of the fourth and fifth disappear phylogenetically. Any attempt to carry the history back into pre-chordate stages leads one to the problem of the origin of segmental musculature, *i.e.*, of the origin of mesoderm, so that this seems to be as far back as one can trace the family tree of the eye muscles.

(15) The Effect of the Heart-beat upon the Development of Blood Vessels.

W. B. Chapman, in the *American Journal of Anatomy*, January 15, 1918, records his results on the development of the vascular system of the chick after removal of the heart. At the thirtieth hour of incubation (*i.e.*, the ten somite stage), the heart of the chick commences to beat, but the circulation does not start until about the thirty-eighth hour (when fifteen to sixteen somites are present). The thirty-third hour was chosen for the time of operation, which was done through the shell under aseptic precautions. The chicks were then incubated for varying lengths of time from 24 hours up to ten days after the operation, although the majority did not survive beyond eight days after operation. It was found that the development of blood vessels in the *area vasculosa* proceeded in a normal manner for a short period beyond the time at which the circulation usually commences. The anterior vitelline veins develope, and the *sinus terminalis* passes through the normal cycle, but other vessels which normally differentiate early, *e.g.*, the omphalo-mesenteric arteries and veins and the posterior vitelline vein, do not form. The property of sprout formation of the capillaries is apparently retained until death, but after the third day is confined to the margin of the *area vasculosa*. In the *area pellucida* (near the embryo) new formation ceases at the third day and regressive changes commence, passing gradually into the *area opaca*. The general conclusion is that, while certain large vessels develope as the result of hereditary factors, yet self-differentiation of the vascular system is very limited, and the further development of arteries and veins is dependent on the mechanical factors concerned with the circulation of the blood.

(16) The Kidney of the Five-Spined Stickleback.

The sticklebacks constitute a group of fishes in which the nest-building instinct is very pronounced. In the species under consideration the nest is constructed of algæ and other small water plants fastened together by means of a substance secreted from the kidneys. Walter N. Hess (*Anatomical Record*, February 20, 1918) has conducted a study with the view of determining what portion of the urinary tract functions in this process. He finds that the secretion is produced only by the male and only during the breeding season. At this time the uriniparous tubules and glomeruli carry on the usual excretory functions, while the cells of the muciparous tubules, urinary ducts, bladder and common urinary duct become modified for the purpose of producing slime. The cell nuclei influence the formation of secretion granules in the cytoplasm, which function by breaking down the cell substance and thus forming the secretion. These secretion granules are apparently derived from the nuclear karyoplasm, and it is thought that the nucleolus functions in the process. The process of regeneration of the cytoplasm following on the slime secretion is uncertain, but it seems evident that the nucleus is the active agent.

(17) Microscope Lamps for Night Work.

E. R. Hoskins (*Anatomical Record*, January 20, 1918) recommends the following as a satisfactory lamp for night work with the microscope, and one that can be provided at small cost as compared with the usual expensive type of lamp. "Mazda" lamps of 16 c.p. with frosted bulbs are dipped two or three times in a saturated solution of *bleu de Lyon* in 50% alcohol, allowing the bulb to dry after each dipping. Attention is called also to "Mazda" lamps of higher power, provided with a blue bulb, which are used commercially to illuminate shop windows. Such lamps give a very strong, white light, which is very suitable for high-power microscopical work.

THE HAROLD PLANT MEMORIAL FUND.

The Council of the Queensland Branch of the British Medical Association considered at its meeting, held on June 21, 1918, a letter from Colonel Plant, accompanied by a cheque for £200, which the writer wished to be used for the purpose of a memorial to his son, the late Captain Harold Frederick Hood Plant, who was killed in action on August 8, 1916. The conditions of the gift are that the income is to be used for the advancement of medical science. Colonel Plant made the suggestion that the money should be invested and the interest allowed to accumulate until the foundation of a School of Medicine in the Queensland University. The Council determined to convey to Dr. Plant their high appreciation of the method adopted by him to perpetuate the memory of his son. The money will be invested in the War Loan, and the President, Honorary Secretary and Honorary Treasurer will act as Trustees to the fund.

British Medical Association News.

ANNUAL MEETING.

The Annual Meeting of the South Australian Branch was held on June 27, 1918, at the House of the Branch, Hindmarsh Square, Adelaide, the President (Dr. J. C. Verco) in the chair.

Annual Report of the Council.

The Annual Report of the Council for the year ending June 30, 1918, together with the Financial Statement and Balance Sheet, were considered and adopted.

The Council has the honour to submit the following Report of the work of the Branch for the year ending June 30, 1918:

Membership.

The Branch now consists of 260 members. Of these, 19 were elected during the year.

The Council regrets to record the deaths of the following members: Dr. A. H. Gault, Lower Mitcham; Dr. W. M. Hunn, Booleroo Centre; Dr. T. K. Hamilton, North Terrace; Dr. W. Norman, Mount Lofty; also Captain G. A. Harvey, who died from wounds received while on active service.

Meetings.

The Annual Meeting was held in the evening of June 28. No dinner was held, this being omitted while the war is on. The President (Dr. J. C. Verco) gave an address, in which he outlined a suggestion for the assistance of medical men at the front and safeguarding their interests, both now and after their return. This address was printed in pamphlet form and a copy sent to all members.

One special and nine ordinary meetings were held, the average attendance being 30 members.

At the ordinary meetings and clinical evenings, seven papers were read, and 22 living exhibits and many pathological specimens were shown.

The Council has met ten times during the year, and much work has been accomplished.

The Acting Honorary Secretary (Dr. A. C. Magarey) has gone on active service, and the Council expresses its appreciation for his valued services, rendered more strenuous by the war.

British Council.

Dr. H. S. Newland was appointed to represent the South Australian Branch, with the Branches of Victoria, Western Australia, and Tasmania, on the Central Council of the British Medical Association.

Library.

The usual grant of £50 has been paid to the University, and many periodicals are being taken for the use of members.

Dr. C. W. Hamilton presented the B.M.A. Library with many valuable books and periodicals from the late Dr. T. K. Hamilton's library.

The Secretary of the Public Library also forwarded several useful books and pamphlets on hospital work in America.

Dr. W. T. Hayward also made a donation of many valuable books to the library.

Federal Committee.

Resolutions from the Federal Committee, passed at its meeting in April, 1917, were referred to a Committee consisting of the President, Drs. Hayward, Hone, Smeaton, and the Acting Honorary Secretary. These have reference to:—

(1) War emergency organization:—
  (*a*) Medical Officers' Relief Fund.
  (*b*) Protection of practices of men absent on naval or military service.
(2) Conduct of Venereal Clinics.
(3) Uniform Medical Registration.
(4) Nationalization of the Medical Profession.
(5) Relationship of Overseas Branches of British Medical Association to Parent Association.

Also from the New South Wales Branch on—

(1) Free Medical Attendance in Federal Territory by Salaried Medical Officers.
(2) Relationship of Overseas Branches to the Parent Association.

The suggestion made in the President's Annual Address that a fund should be formed in South Australia for the assistance of medical men who had been on military service, and of their dependants, was deferred by the Council, and now merges into the resolution passed by the Federal Committee.

General.

Your Council resolved that accident insurance companies should be responsible for the fee of 10s. 6d. for medical certificates, which the members of the profession should decline to furnish unless prepaid by the company. The Accident Underwriters' Association has been notified to this effect, and the Secretary has stated that the question of liability for fees for certificates rested with the individual companies, and not with the Association.

At the official opening of the Bedford Park Sanatorium the Branch was represented by the President and Secretary.

Friendly Societies.

Pursuant to the resolution of the Branch at the last Annual Meeting, the agreement between the Council and the Friendly Societies' Dispensary was signed by the President and Acting Secretary, and has been working satisfactorily since.

The Council has been approached by the Eastern Suburban Friendly Societies in reference to an arrangement by which they pay the chemists for the supply of drugs and the lodge surgeons for medical attendance. The agreement has been drawn up by the Association and the Societies embodying this arrangement, as well as income limit and other items of the proposed model lodge agreement. This was signed on June 14, 1918.

The War.

In accordance with the intimation given in the last Annual Report, a Medical War Committee of the Branch was formed by the Council, consisting of the Principal Medical Officer (Colonel Russell), the President (Dr. J. C. Verco), the Acting Honorary Secretary (Dr. A. C. Magarey), and Drs. Cudmore, Hone, Lynch and Smeaton.

This Committee has been acting through the year, so as to conserve the interests of the civil population and of the medical men on service, or who have returned to South Australia.

It was decided that when a member resumes private practice in South Australia after having been on active service, the following notice shall be sent by the Council (on request) for insertion in the daily press:—

> "The Council of the South Australian Branch of the British Medical Association desires to notify the former patients of Dr. ——— that he has returned from active service, and will resume practice from — (date)— at ———."
>
> JOS. C. VERCO, President.

June 14, 1918.

Election of Office-Bearers.

The following were appointed officers of the Branch and Members of the Council:—

President: Dr. J. C. Verco (re-elected).
Vice-Presidents: Drs. A. M. Cudmore and J. E. Good.
Federal Committee: Drs. W. T. Hayward and F. S. Hone.

Honorary Secretary: Dr. H. S. Newland (on active service).
Honorary Acting-Secretary: Dr. J. B. Gunson.
Honorary Treasurer: Dr. W. A. Verco.
Representative of "The Medical Journal of Australia": Dr. C. T. de Crespigny.
Honorary Auditor: Dr. H. H. Wigg.

Library Committee: Drs. A. M. Cudmore, F. S. Hone, A. A. Lendon and H. Swift.
Members of Council: Drs. E. V. R. Fooks, H. H. E. Russell and F. S. Scott.

Dr. J. C. Verco (the President) delivered an address on the life and work of the first President of the South Australian Branch, the late Dr. William Gosse.

BRITISH MEDICAL ASSOCIATION, SOUTH AUSTRALIAN BRANCH.

Revenue Account for Year ended 31st December, 1917.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Sundry Expenses—Printing, Stationery, Postage, etc.	21 16 2		By Balance as at December 31, 1916		666 17 5
„ Advertisements *re* Meetings, etc.	0 15 0		„ Subscriptions and Arrears	717 2 0	
„ Taking Verbatim Report of Meeting and Typing same	6 16 0		*Less* Amounts Repaid—		
„ Salary—Lay Secretary	43 17 0		Medical Benevolent Fund £35 11 6		
„ Grant to University Library	50 0 0		Medical Defence Association 1 16 0		
„ Delegates' Expenses to Federal Committee	35 14 0			37 7 6	
„ *British Medical Journal*	227 8 4				679 14 6
„ *The Medical Journal of Australia*	246 19 6		„ Interest on Treasury Bills and Bank Accounts		16 5 9
„ Depreciation Written Off Plant, Furniture, etc.	7 0 8		„ Subscriptions Received in Advance		12 13 6
		640 6 8			
„ Balance		735 4 6			
		£1,375 11 2			£1,375 11 2

Balance Sheet as at 31st December, 1917.

Liabilities.	£ s. d.	£ s. d.	*Assets.*	£ s. d.	£ s. d.
To Sundry Creditors—			By Plant, Duplicator, Bookcases, Cabinet		133 12 10
Capitation Grant — Federal Committee	5 18 0		„ Sundry Debtors—		
The Medical Journal of Australia	46 15 0		Interest Account	4 0 0	
Medical Benevolent Fund	0 10 0		Subscription Account	2 2 0	
		53 3 0	Library Fund Account	7 17 6	
					13 19 6
„ Balance as at December 31, 1917		735 4 6	„ Treasury Bills		100 0 0
			„ Bank Balances—		
			National Bank	14 1 3	
			Savings Bank	227 6 1	
			Commonwealth Bank	231 19 6	
			„ Savings Bank—Library Fund	62 8 4	
					535 15 2
			„ Petty Cash		5 0 0
		£788 7 6			£788 7 6

February 25, 1918.

Audited and found correct.

H. HIGHAM WIGG.

Statement re Library Fund.

	£ s. d.	£ s. d.		£ s. d.
To Balance, December 31, 1916		66 14 0	By Grant to University Library	50 0 0
„ Interest		2 13 4	„ Balance	62 8 4
„ Subscriptions—				
Seventy-eight Members, 1917	40 19 0			
Two Arrears, 1916	1 1 0			
Two Arrears, 1915	1 1 0			
		43 1 0		
		£112 8 4		£112 8 4

To Present Balance at Bank, £62 8s. 4d.

Difference between amount received for Subscriptions and amount paid to University Library in 1916	£0 18 3
Difference between amount received for Subscriptions and amount paid to University Library in 1917	6 19 0
	£7 17 6

Adjustment has been made by withdrawing this amount from Savings Bank Library Fund and paying into General Fund.

SCIENTIFIC.

At a meeting of the Queensland Branch, which was held on May 3, 1918, Dr. K. F. C. Brunnich read a communication on a bacteriological study of seventy cases of urinary infection, with special reference to pyelitis (see page 23).

In the course of the discussion Dr. C. A. Thelander suggested that a blow just below the last rib was effective in demonstrating a tender kidney. He found that it was often difficult to carry out an analysis of the urine in acute cases of appendicitis.

Dr. L. M. McKillop thanked Dr. Brunnich for having brought the subject up for discussion. He had noticed that it was not infrequent for headaches and a general feeling of *malaise* to be produced by bacilluria. He was of the opinion that the infective organism often gained access through the mucous membrane of the appendix. In regard to differential diagnosis, he stated that true lumbago was always a bilateral disease.

Dr. T. H. R. Mathewson recognized that Dr. Brunnich's investigations had entailed a great deal of work. There were two types of pyelitis in children. The first was the acute type, which responded quickly to treatment. The second was the chronic type, which was usually associated with marasmus, which was not improved by dietetic treatment and which was manifested by the appearance of bacilluria. In these cases he had found vaccines of value.

Dr. Burton Bradley said that the paper had interested him very much. He recognized two types of cases with colon bacilli in the urine. He found it difficult to believe that the infection was an ascending infection. It was very difficult to grow *bacillus coli communis* in urine. He could not explain how bacilluria could exist without symptoms. It was, in his opinion, advisable for clinicians and bacteriologists to collaborate in studying these cases. He felt that there was something behind the urinary infections. It was important to make cultures on serum for the purpose of detecting organisms such as the pneumococcus and the diphtheroid bacilli. He pointed out that it was quite essential in the case of female patients to obtain catheter specimens.

Dr. G. Davidson expressed the opinion that the removal of the appendix often cured a pyelitis.

Dr. R. A. Macleod held that it was very necessary to make a microscopical examination of the urine. Rigors were important as early symptoms. They were very common in children and in pregnant women. He admitted that he had not been as successful in the treatment of these cases as Dr. Brunnich had. He had used a citrate of potash and other alkalies every two hours, and had controlled the effect by testing the urine. If no benefit was secured after five or six days, he tried the opposite treatment of rendering the urine acid. He had discovered a much larger number of cases of pyelitis since he had examined the urine microscopically as a routine method.

In reply, Dr. Brunnich thanked the members for the manner in which they had received his paper. He thought that it was quite possible that appendicectomy might cure some of these cases.

A meeting of the South Australian Branch was held on May 30, 1918, in the Lister Hall, British Medical Association House, Hindmarsh Square, Adelaide, Dr. J. C. Verco, the President, in the chair.

Dr. H. Gilbert exhibited a patient on whom he had operated for gun shot wounds of the abdomen.

Dr. John Corbin showed a patient in whom he had performed bone grafting of the arm for an old gun shot injury. The skiagram of the limb was also exhibited. He demonstrated another skiagram, illustrating an unusual fracture of the fibula from indirect violence.

Dr. William Ray showed a male patient, aged 48 years, who was suffering from marked Paget's disease of bones involving the femora, the iliac bones, the vertebræ and the skull. He handed round skiagrams of the pelvis and the skull.

Dr. W. T. Hayward, C.M.G., read a paper on acute febrile polyneuritis (see page 27).

Dr. H. Swift said that he had listened with much interest to Dr. Hayward's paper. He considered that the Branch was indebted to him for bringing an instance of this condition to their notice. He called attention to the title of the paper, "Acute Febrile Polyneuritis." If his memory served him correctly, the highest recorded temperature in Dr. Hayward's case was 37.8° C.. This, taken in conjunction with the comparatively short duration of illness, was remarkable. In several cases of acute febrile polyneuritis, not only was there a high temperature for several weeks, but the patients took many months to recover, if they did not die. In two cases he had seen more or less recently the course of the disease was almost identical. The illness had commenced with symptoms of a most pronounced enteric type, but there had been no roseolar rash, nor had the spleen been enlarged, and the Widal reaction had been negative. It was not until the third week in the one case and the fourth in the other that any symptoms were noted which indicated the presence of a multiple neuritis. In the severer case the neuritis advanced very slowly, until there was almost complete paraplegia of the lower extremities and a partial paraplegia of the upper. The patient was in the hospital for nine months, and at the end of that time walked out with the aid of a stick. She had had no facial paralysis, nor any glossopharangeal symptoms.

The contrast between the extremely slow rate of progress in the ordinary case of acute multiple neuritis and the rapid recovery in Dr. Hayward's case was very great, and difficult to explain. In the case of the woman referred to above, there was marked pyrexia, the temperature reaching as high as 39.4° C., while, in the third week, there was a morning remission of two or three degrees, and a very gradual return to normal after some weeks. The facial paralysis and the affection of the muscles of deglutition and of respiration reminded him of diphtheritic paralysis in more ways than one. The onset of this condition was unattended by marked fever. The pulse-rate was generally accelerated, and, in severe cases, there was an irregular rhythm. The first sound at the apex was weak, and the pulse was of tension. These cases did not take so long to recover as did other forms of polyneuritis, except when the heart had become dilated from a weakened myocardium. The return of the knee reflex, however, was often delayed for months.

If he remembered correctly, the affection of the glossolabial nerve in Dr. Hayward's case had appeared late in the disease. In diphtheritic paralysis this nerve was affected early, as was evidenced by the return of fluids through the nose and the difficulty in swallowing, which were among the earliest symptoms. The late involvement of the nerve rather suggested Landry's paralysis.

Dr. Humphrey Marten said that his first impression on hearing Dr. Hayward's very interesting paper was that it was a case of Landry's paralysis. Yet it did not exactly fill the bill. When the speaker was in England a few years before he had been greatly struck by the frequency in which the diagnosis of Landry's paralysis was made. He began to think that it was a sort of refuge for the destitute, and when the physician was unable to make any other diagnosis in the case of an ascending paralysis, he gave it this name. There were two points in Dr. Hayward's case that puzzled him. The first was the stiffness in the muscles of the neck, and the second was the apparent Kernig's sign. Both these phenomena were usually regarded as due to meningeal irritation. The latter, however, may have been due to the involvement of the sciatic nerve.[1]

Dr. B. Poulton referred to a case which he had under his treatment at the time, in which there were marked signs of multiple neuritis. In this case there had been fever of two months' duration. The patient was a lad of 18 years. He admitted that he had been drinking beer and spirits freely for two years. The febrile symptoms and pain were diminishing, and there was a gradual increase of muscular tone and power.

Dr. C. T. C. de Crespigny also took part in the discussion.

Dr. Hayward thanked the members for the interest they had shown in discussing the case. He had at first been inclined to regard it as an instance of Landry's disease, but further investigation showed that it was not. It differed

[1] Dr. Humphrey Marten informs us that, after a careful perusal of Dr. Gordon Holmes's article in the *British Medical Journal*, he accepted without hesitation the diagnosis in Dr. Gordon Holmes's case, and wrote to Dr. Hayward to this effect.

from the few cases of that disease that had previously come under his notice. It could not have been mistaken for alcoholic neuritis. The signs and symptoms were quite definite, and tallied exactly with the description of the cases given by Gordon Holmes. He had no doubt, neither had his colleagues, that the condition was a form of neuritis different from those usually described in the text-books of neurology.

FRIENDLY SOCIETIES IN VICTORIA.

His Honour, Judge Wasley, who was appointed on April 13, 1918, Royal Commissioner to investigate the disputes leading to the resignation of the medical officers of friendly society lodges in Victoria, issued his report on June 21, 1918. After the usual preamble, His Honour continued as follows:—

I.—History of Dispute.

Dealing with the first clause of my commission—that I should "enquire into and investigate the disputes and differences leading to the resignation as from the 31st January, 1918, of the medical officers of certain friendly societies or branches thereof registered under the *Friendly Societies Acts* and also of institutions or bodies consisting of members of friendly societies or branches registered under the Acts aforesaid and all matters affecting the merits of the said disputes and differences or relating thereto or arising therefrom"—it has been shown that from the year 1878 up to the end of 1916 there had been no substantial variation in the amounts paid by lodges for medical attention and medicine. While the doctors at various times expressed their dissatisfaction with the ruling rates, and spasmodic efforts were made from time to time to increase them, no concerted action was taken until August, 1913, when the Secretary of the British Medical Association wrote to the Secretaries of each of the friendly societies, inviting a conference "to consider the whole subject of medical attendance by the members of this Association upon members of friendly societies in Victoria." In December, 1913, a conference was held, at which the doctors set out their views and arguments for increased remuneration. In July, 1914, another conference was held of representatives of both bodies (the British Medical Association and the Friendly Societies' Association), and it was suggested that a sub-committee of five from each body should meet on 8th August, 1914, to consider the matter and report the result to a future conference. Meantime, the war had broken out, and on the 5th August, 1914, a letter was sent by the Secretary of the British Medical Association to the Secretary of the Friendly Societies' Association in the following terms: "At a meeting of our sub-committee of five, held last evening, it was decided that one of our members should move at next Saturday's meeting the following resolution, 'That, in this national emergency, and in view of the probable industrial distress, a recommendation be sent to the Councils of the British Medical Association and the Association of Friendly Societies in Victoria to postpone consideration of the matters now under dispute to some future date.'" When the representatives of both bodies met on the 8th August, objection was taken by the friendly societies' representatives to the clause, "in view of the probable industrial distress." It was agreed that this clause should be struck out of the proposed resolution, and, on the motion of Dr. Boyd, one of the medical representatives, seconded by Mr. Liston, one of the friendly societies' representatives, the resolution as so amended was agreed to. While it is perfectly plain that the terms of the resolution were that consideration of the matter was to be postponed "to some future date," nevertheless I feel certain that some, if not all, of the friendly societies' representatives believed that it was intended that nothing should be done until after the termination of the war, and they gained this impression to some extent from remarks made by both sides at the conference on 8th August, 1914. Probably the cause of the misunderstanding was that none of the representatives had it in their minds that the war would continue for any lengthy period, and when they spoke of "some future date" it was assumed by the representatives of the friendly societies that this was synonymous with "termination of the war." Acting upon this belief, an intimation was given by the friendly societies' representatives to a number of the lodges that the dispute with the doctors was postponed during the continuance of the war, and most lodges then arranged that the contributions to the lodges of the men who had enlisted, should be met by a levy on the remaining members. While it would be ungenerous to discount the patriotism and loyalty of those who advocated, and those who assented to, this levy, yet, I think that, had it been considered probable that the claim of the doctors for increased remuneration would be renewed during the war, those in authority would have given greater consideration to the question whether their members (who were mostly wage-earners in a not very good financial position) would be able to stand the financial strain of these levies, and also of the extra contributions that might be necessary, if the claims of the doctors for additional payment were granted. No further steps to obtain increased remuneration were taken for two and a half years. In March, 1917, the doctors revived the matter, and the British Medical Association requested the Friendly Societies' Association to again confer with them, to consider the question that had been outstanding. Various conferences were held during 1917, but no agreement was arrived at. The representatives of the friendly societies vigorously urged that to re-open the matter at that time was a breach of faith on the part of the doctors, as the truce agreed upon was to continue during the war. The medical representatives argued just as strongly that there was no breach of faith on their part, and that the agreement arrived at in August, 1914, was exactly expressed in the resolution that had been carried, namely, to postpone consideration to some future date. The medical representatives further urged that the industrial distress that had been anticipated at the outbreak of the war had not come to pass, and that the people generally were more prosperous than they had ever been, and that, under these circumstances, it was quite fair on their part to re-open the matter. The parties were not able to come to any agreement, and in October, 1917, the doctors forwarded their resignations, to take effect as from the 31st January, 1918. No good purpose would, I think, be served by elaborating more in detail the circumstances that led up to the resignation of the doctors.

II.—Recommendations as to Matters in Dispute.

Dealing with the second clause of my Commission, that I should "inquire into and consider and make such recommendations as I think just and reasonable with respect to what should be provided for in agreements between friendly societies or branches or between the institutions or bodies aforesaid and medical officers of the same, including terms and conditions of such agreements and remuneration or payment of medical officers thereof and the method of determining such remuneration or payment, with power to make different recommendations to meet special and local conditions," there have been two principal items of controversy between the parties: (1) rates of payment, (2) income limit of members, and, of these, I think the former is the more important, and if the parties could have come to an agreement on this subject, the other matters in dispute could probably have been adjusted.

(1) Rates of Payment.

The rates prevailing in the past have averaged approximately 14s. per annum for town members and 17s. 9d. per annum for country members. The new rates asked by the doctors are 20s. per member per annum for Melbourne and suburbs, for Ballaarat, Bendigo, and Geelong, and for the rest of the State, 26s. per member per annum. The friendly societies' representatives have made various offers in their attempts to settle the matter, their highest offer being 17s. for town members and 24s. for country members, but none of their offers was accepted by the doctors. In considering this matter, I have not approached it from the aspect of deciding what would be a reasonable remuneration if performed by the doctors for individual patients who were able to pay ordinary and reasonable fees. If looked at in this light, it seems obvious that, inasmuch as the ordinary fee in such cases is from 7s. 6d. to 10s. 6d. per visit, the doctors might demand higher fees than they are now claiming. I have taken into account the fact that in obtaining a lodge appointment a considerable amount of work is provided for the doctor without any effort on his part and for which payment is guaranteed; a lodge appointment also acts as a

valuable introduction, and gives the doctor opportunities he would not otherwise have of working up a remunerative private practice. On the other hand, even after taking these matters into account, I think it must be admitted that the doctors, in accepting lodge patients at the rate demanded, are making a concession to wage-earners, and it should be remembered that the wages in other callings have considerably increased during the past 30 years, as shown by the fact that, while the average rates of wages payable to adult male workers in Victoria in 1891 was 40s. 5d. per week, in 1917 it was 63s.—an increase of 55%. It has been urged in answer to this contention that, although wages have increased, yet the prices of necessary commodities have increased in greater proportion, so that the wage-earner is really worse off now than when he received lower wages. It mush be remembered, however, that the doctors, as well as the wage-earners, are affected by the increased prices of these commodities, and, therefore it seems to me that the doctor is entitled to a substantial increase on previous rates, and that the rate demanded for town members—namely, 20s. per member per annum—is not unfair. As regards the country rates, they have been in the past about 25% higher than town rates, and, applying the same principle, I would suggest that 25s. per member per annum be a fair charge for country members. For the reasons I have previously mentioned, namely, the misunderstanding as to the truce, the imposition of levies to pay contributions of men at the front, etc., I think portion of this increase should not be payable until after the termination of the war, and if I had to fix the amounts, I would suggest the reduction in each case of 3s. per member per annum during the war, making the rates 17s. for town members and 22s. for country members during the war, and 20s. for town members and 25s. for country members after the war. This suggested reduction, however, has probably been rendered unnecessary by reason of the fact that the doctors have made a generous offer, which amounts to a reduction of their fees by about the same amount as above mentioned, namely, 3s. per member per annum, amounting to about £20,000 per annum. The offer they make is, that they will not ask for payment in respect of any of the men at the front, that they will without payment attend any dependants of the men at the front, and they will consent to these men (when they return) being again placed on their lists without examination. As the financial result to the friendly societies is the same in each case, I think it is reasonable that the doctors' suggestion should be adopted.

One can readily understand the importance they attach to the matter from a sentimental aspect. In the one case, they are apparently charging, and being paid, for men who are away fighting for them. In the other case, it is made quite plain that they are not so charging, but, on the other hand, are doing something for those whom the soldier has left behind. Great stress has been laid on the contention that the members will not be able to pay the increased rates, and would be compelled to leave the lodges, but when it is considered that these extra rates really involve an extra liability of about 1½d. per week for each family on the doctors' list, I cannot help thinking that this objection is not as serious as has been contended.

Female Lodges.—The position of the female lodges is different. Here the majority of the members are single girls without dependants, and the payments to the doctor are for attendance on one individual, and not on a family, as in male lodges. I would, therefore, suggest that in female lodges the rate should be:—

(*a*) for attendance on the member only, 12s. per annum;
(*b*) for attendance on a member with dependants, 18s. per annum.

If I were to distinguish between town and country members, I would have suggested lower rates than these for the town and higher for the country, but I think no injustice will be done by having one rate for town and country.

(2) Income Limit of Members.

This has been one of the principal items in dispute between the parties, the doctors vigorously contending that it is not fair that wealthy persons, who are well able to pay ordinary medical fees, should receive medical attendance at the low rates agreed upon for the lodges, and the friendly societies asserting just as strongly that to make this class distinction would do great injury to their societies. While I agree with the principle for which the doctors contend, yet in their application of it I think they have not been sufficiently liberal, and have fixed the income limit at too low a figure. Unless there is a fair margin between a man's income and the sum that will be necessary to supply his reasonable wants, I think he is perfectly justified in joining a lodge, and enjoying all the benefits that arise from his membership. If a liberal margin is allowed, I feel certain that the fears expressed by the friendly societies' representatives as to the probable injury that would be sustained by their societies will prove to be to a great extent imaginary. The very fact of the rule being in existence will probably be sufficient to prevent persons from claiming medical attendance at lodge rates who, on account of their financial position, were never intended to receive lodge benefits of this nature. I would suggest some such provision as the following:—

> "A member shall not be entitled to medical attendance if (*a*) during the twelve months prior to his request for medical attendance his net income, and if (*b*) during the three years prior to such request his average net income, has exceeded the amount hereinafter set out."

The reason for the provision as to the average income for the period of three years is to meet cases such as, for example, that of a farmer who, after several lean years, in which his net income has been little or nothing, and during which he has been compelled to get into debt, has had a good year, when his net income has exceeded the specified amount, but has not been sufficient to bring his average income for the three years up to that amount. The figures I would suggest are as follows:—

(*a*) Single man or widower without dependants, £260.
(*b*) Single man or widower with one dependant, £312.
(*c*) For each dependant after the first an additional £26 per annum.
(*d*) Married man with wife and no dependant, £312.
(*e*) For each dependant an additional £26 per annum.

Dependant to include:—

(*a*) A person wholly dependant on the member.
(*b*) A person partially dependant where the cost to the member of such dependant exceeds £25 per annum.

To make the clause workable, it would probably be sufficient if there were a provision that the member should, on the request of the doctor or the secretary of the lodge, make a statutory declaration as to his income, and if he refuses such declaration, the doctor should be entitled to refuse to attend him. If he did make such declaration and the doctor was not satisfied with the truth of it, the matter could be referred to the board appointed to deal with other disputes between the doctor and a member, as provided in Clause 14 of the doctors' model agreement.

Regarding the other matters in dispute, probably the most convenient way will be to take the clauses of what has been called the "Proposed Model Agreement," submitted by the doctors to the friendly societies for acceptance.

The first clause is as follows:—

> 1. The medical officer shall, when requested, give his professional services when necessary to all members of the lodge whose names are on a list, which shall be furnished to him quarterly by the secretary of the lodge. For the purpose of this agreement the word "member" shall be deemed to include—
>
> (*a*) Member, (*b*) honorary member, (*c*) wife, (*d*) children, stepchildren and legally adopted children up to the age of 16 years, (*e*) widowed mother of an unmarried member if resident with and wholly dependent upon him, (*f*) widow of deceased member (if paying full rates), and children up to the age of 16 years, (*g*) one daughter over the age of 16 years of a widower, (*h*) brothers and sisters of an unmarried member up to the age of 16 years, both of whose parents are dead, provided that such brothers and sisters are resident with and wholly dependent upon him.
>
> Provided that any illness, hurt or accident be not occasioned by misconduct, drunkenness, immorality, or be the effect of any disease contracted before the member's admission to the said lodge, information of which had been withheld from the medical officer at the time of the examination.

Provided, also, that the medical officer shall not, under this agreement, be prevented from claiming adequate fees for attendance upon any member who has received compensation or damages for any accident or disease in a court of law or otherwise.

In this clause, instead of "children up to the age of 16 years," I think the provision should be "children up to the age of 16 years in the case of males and 18 years in the case of females." I suggest this alteration for two reasons: first, it is obvious that girls between the ages of 16 and 18 have not the same capacity or facilities for earning money and themselves becoming members of lodges as boys between the same ages have; and, secondly, because the doctors themselves included this provision in the proposed agreement that they submitted to the friendly societies in 1913. As to the first proviso in this clause, I think the word "knowingly" should be added between the words "been" and "withheld." At the proceedings before me counsel on both sides made it perfectly plain that they could not definitely bind their clients by any proposal they made, but there were various amendments suggested in dealing with the model agreement which counsel thought reasonable, and, as far as they saw, were unobjectionable. This observation applies to the suggested alteration in the first proviso to Clause 1. As to the second proviso, it was admitted by both sides that it did not exactly express what they meant. What they intended to provide was that, if a member received damages for an accident sustained by him, and such damages included, or should have included, the fees for medical attendance, the doctor should not be prevented by his agreement with the lodges from suing for the fees to which he would ordinarily be entitled in case of a private patient. It was also not intended that this clause should apply to cases under the *Workers' Compensation Act*. I have not attempted to draft a clause dealing with these matters, as counsel intimated to me that it was not necessary that I should do so, and I think it would be better to leave this matter to the parties to settle the terms of an agreement embodying the views I have expressed.

Clause 2 of the doctors' agreement was as follows:—

2. No name shall be added at the beginning of any quarter and no name shall during any quarter be removed from or added to the list supplied by the lodge secretary without the consent of the medical officer. Names of members on medical officers' list shall be supplied within 14 days of the beginning of each quarter.

The friendly societies submitted to me a proposed agreement setting out their views, and both agreements are in accord as regards Clause 2.

Clause 3 of the doctors' agreement provides as follows:—

3. The medical officer on receipt of payment of a fee of 5s. shall carefully examine any candidate referred to him for examination as to his fitness for admission to the lodge. The name of each candidate he has deemed fit for admission, and who has been admitted to the lodge, shall be placed on his list for one quarter at least. The medical officer may, if he so desire, medically examine any of those included by the word "member" in Rule I. before accepting the member upon his list. No charge shall be made for examinations, except of the member.

As regards the payment of a fee of 5s. for examination of a candidate for membership of a lodge, I think that, in principle, the doctors' contention that they should be paid a fee for such examination is accurate; as regards the amount of the fee, the evidence submitted by the doctors showed that the time taken in such examination was practically the same as that occupied in visiting the patient. The work involved seems to me to be no more strenuous, and certainly not more skilful, than that necessary for diagnosing and treating the complaint of any patient, and I, therefore, think that the fees in each case should be of about the same amount. I would suggest that a proper fee to allow to the doctor would be 2s. 6d., instead of 5s. The clause in this agreement. "the medical officer" down to "upon his list," does not express what either of the parties intended, and I think it would be acceptable to both sides if it were altered so as to provide as follows:—

"the medical officer may, if he so desire, medically examine any of those included by the word 'member' in Clause 1, and if on such examination the medical officer is not satisfied as to the state of health of such person, he may refuse to accept such person as being one of those entitled to medical attendance."

Clause 4 provides as follows:—

4. The medical officer shall not be required to attend any member, or any of his relations, for any complaint or disease from which, or from the effects of which, he, she, or they may have been suffering at the time of the admission of the member to the lodge.

I think this clause would be acceptable to both parties if, after the word "lodge," the words were added, "information of which had been knowingly withheld from the medical officer."

Clause 5 provides as follows:—

5. The medical officer shall be required to write and furnish, at his consulting-rooms, to the lodge, and to members under his treatment, such medical certificates as may be required for the purposes of the lodge. For all such certificates printed forms shall be supplied by the lodge. The medical officer shall not be required to furnish certificates of ill-health of any member oftener than once a fortnight. Certificate forms of all lodges and orders shall be interchangeable.

I think this clause would be acceptable if, after the word "fortnight," the words "except upon the written request of the secretary of the lodge" were added.

Clause 6 provides as follows:—

6. Surgical operations, accouchements, miscarriages and administration of general anæsthetics shall be paid for by the member. The fee shall be matter of private arrangement between the member and the medical officer.

I think this clause would be acceptable to both sides if, after the word "operations," the words "other than minor surgical operations not requiring anæsthetics" were added.

Clause 7 provides as follows:—

7. In all cases where any member, or his relatives, entitled under this agreement to medical attendance by the medical officer, shall require his services, and are not, by reason of the illness from which he, she, or they may for the time being be suffering, prevented from attending at the medical officer's consulting-rooms, he, she, or they shall attend at the medical officer's consulting-rooms during the consultation hours he has set apart for lodge patients. When such attendance by the patient cannot be so made, the medical officer, on receiving written notice that his services are required (such notice to contain the member's name and address in full and the name of the lodge), shall attend on the same day at the residence of the patient, provided such residence is within miles of the medical officer's consulting-rooms by the nearest practicable road, and the notice to attend shall have been left at the medical officer's consulting-rooms before the hour of

When such notice is left at the medical officer's consulting-rooms between the hours of 8 p.m. and 8 a.m., and he attends within these hours, the member shall pay the medical officer the sum of 5s. for every such attendance.

I think it would be acceptable to both sides if, instead of the phrase "during the consultation hours set apart for lodge patients," the following words were substituted, "during the hours he has set apart for consultations." The blank as to mileage in this clause should be filled in by inserting the word "three" and the blank as to hour by inserting "9.30 a.m." Instead of a charge of 5s. for what has been called night calls, I think the sum of 2s. 6d. should be substituted, and I think this would be acceptable to both parties.

Clause 8 provides as follows:—

8. In consideration of the above services being performed, the said trustees agree to pay the medical officer quarterly a salary in respect of each member upon his list during the whole or portion of a quarter at the minimum rate of one pound per annum in the metropolis and the cities of Ballarat, Bendigo, and Geelong; in the country and other towns at the minimum rate of 26s. per annum; medicine and mileage to be charged extra.

The medical officer shall supply, if necessary, all B.P. medicines (not serums or vaccines) at the minimum rate of 10s. per annum per member, and shall supply whatever dressings and splints may be required for fractures,

dislocations and other injuries as are commonly kept by medical practitioners for use in an emergency. He shall not supply bottles, etc., nor pay for postage or carriage of medicines, etc.

I have already stated at length the alterations that I think should be made in this clause.

Clause 9 provides as follows:—

9. In any case in which the medical officer shall visit a member at a place more than miles from his residence, mileage shall be payable at the minimum rate of 5s. per mile for every mile, or fraction thereof, beyond such miles travelled on the outward journey in the day time and at the minimum rate of 7s. 6d. if travelled between the hours of 8 p.m. and 8 a.m.

It is difficult, if not impossible, to lay down a universal rule as to mileage, or as to the reasonable charges for extra mileage, and I think the matter could be more satisfactorily dealt with if left to individual bargaining between the medical officer and the particular branch concerned, as the local conditions affecting this matter, for example, the state of the roads, the scattered nature of the population and so on, must vary in each case. I have, however, been pressed by counsel for the friendly societies to deal with this matter, and the nearest I can come to a rule that, when taken in its entirety, may act fairly, would be to fix two miles as the distance to be travelled without extra payment, and after two miles the rates should be 3s. 6d. between 8 a.m. and 8 p.m. and 5s. between 8 p.m. and 8 a.m. This rule will probably act harshly on the medical officer in certain instances, but any other rule would probably operate just as inequitably, or even more so in other cases.

Clause 10 provides as follows:—

10. In cases of accouchement or miscarriage, the medical officer, if not employed at the case, shall not be required to attend either the patient or the infant until twenty-one days have elapsed from the date of confinement or miscarriage.

This clause, as it stands at present, is, I think, acceptable to both sides.

Clause 11 provides as follows:—

11. If the patient be visited professionally by any other practitioner without the consent of the medical officer, while under the medical officer's medical or surgical attendance, save in the cases of sudden emergency, or if in any emergency case any other practitioner has visited the patient, and the medical officer has not been informed at the time of the circumstance, and of the name of the practitioner called in, or if the instructions and treatment ordered by the medical officer are objected to or not carried out by the patient or his attendants, then the medical officer is at liberty to cease attendance during the subsequent course of the complaint from which the patient may be suffering.

Moreover, the medical officer is to be the sole judge of how often it is necessary to visit a patient during his attendance on him.

This clause, as it stands, is, I think, acceptable to both sides.

Clause 12 provides as follows:—

12. The medical officer shall not be required under this agreement to conduct himself in any way that may by the British Medical Association of Victoria be deemed unprofessional or not in accordance with medical ethics.

I think this is a reasonable provision.

Clause 13 provides as follows:—

13. The medical officer shall be at liberty, whenever he cannot attend personally, to provide a qualified substitute, and the trustees agree to accept such substitute.

This clause, as it stands, is, I think, acceptable to both sides.

Clause 14 provides as follows:—

14. In the event of any charge being laid against the medical officer by any member of the lodge, the same shall be made in writing within 48 hours and notice given to the medical officer within 48 hours of its receipt by the secretary of the lodge. The medical officer's reply thereto, if any, shall be read before the lodge immediately after the reading of the charge, and the medical officer shall be informed in writing of the decision. If the medical officer sends to the lodge a protest in writing against the decision of the lodge in regard to the charge before 14 days have elapsed from the time of his receiving such decision, then all documents in connexion with the charge shall be referred to a board of arbitrators composed of three members of the British Medical Association of Victoria and three delegates from the lodge, and the decision of this board shall be final.

A sum of 10s. shall be lodged by a member at the time of making a complaint, and this sum shall be forfeited if the charge be not sustained.

In the event of any member acting in an insolent or abusive manner towards the medical officer, the medical officer may make a charge against such member of the lodge, and request that the member's name be removed from the list at the end of the then current quarter, and if the lodge refuses to remove such name from the medical officer's list, he is at liberty to appeal to the aforesaid board of arbitrators, whose decision in the matter shall be final.

After the words "receiving such decision" there should be substituted the following, "then the charge shall be referred to a board of arbitrators composed of three persons nominated by the medical officer and three persons nominated by the member, with a chairman to be mutually agreed upon, and, if not so agreed upon, to be appointed as provided in the *Arbitration Act, 1915*, and the decision of such board shall be final. A sum of 10s. shall be deposited with the secretary of the lodge with any complaint or charge under this section, otherwise no such complaint or charge shall be considered. This sum so deposited shall be dealt with as the said board may determine." The remaining part of this clause, "in the event" down to "final," is, I think, acceptable to both parties.

Clause 15 provides as follows:—

15. The medical officer shall, when requested, meet another medical practitioner mutually agreed upon in consultation upon any case, and shall be paid the fee of 21s. by the member for such consultation.

After the word "requested," I think there should be added the words "by the member," and, inasmuch as the ordinary fee that the medical officer would charge for such consultation in the case of a private patient is 21s., I think that a fair charge in the case of a lodge patient would be 10s. 6d.

Clause 16 provides as follows:—

16. Every member of the lodge entitled to the medical officer's services shall be provided by the lodge with a prescription book containing the terms and conditions of this agreement.

Instead of the words "containing the terms and conditions of this agreement," I think there should be substituted the following words: "and with a copy of this agreement."

Clause 17 provides as follows:—

17. This agreement to remain in force until terminated at the end of a quarter by either party giving three months' notice in writing.

I think this clause, as it stands, is acceptable to both parties.

The doctors' "Proposed Model Agreement" then provides as follows:—

And whereby it is further agreed—

1. Any member of the said lodge, who was a member thereof before the 1st day of November, 1917, shall be entitled to be attended by the said medical officer under the terms of this agreement.

2. Any member who shall have joined the said lodge after the aforesaid 1st day of November, 1917, whose income, including, if married, that of his wife, did not exceed £208 per annum at the time of so joining, shall be entitled to be attended by the said medical officer under the terms of this agreement, and shall continue to be so entitled so long as such income does not exceed £312 per annum.

3. No member joining the said lodge, on or after the aforesaid 1st day of November, 1917, whose income, including, if married, that of his wife, exceeded £208 per annum at the time of so joining, or whose income, including, if married, that of his wife, exceeds £312 per annum, shall be entitled to be attended by the said medical officer under the terms of this agreement; provided that any member joining the said lodge on or after the aforesaid 1st day of November, 1917, whose income, including, if married, that of his wife, does not exceed £208 per annum, shall be entitled to be so attended, although his income as aforesaid, at the time of so join-

ing, exceeded £208 per annum; provided also that, notwithstanding that a member has income, including, if married, that of his wife, as aforesaid, exceeding £208 or £312 per annum, as the case may be, such member shall nevertheless be entitled to be so attended by the medical officer, if, by reason of having many persons dependent on him, he is, in fact, in poor circumstances, and unable, otherwise than through the medical benefit of the lodge, to provide medical attendance for himself and those dependent on him. Provided also that, under special circumstances, the above proviso may also be put in force for an applicant for lodge membership.

I have already dealt fully with this matter under the heading "Income Limit of Members," and have suggested such alterations as I think should be made. It will be understood that the income limit provision proposed is to apply only to new members, and will have no retrospective effect.

In conclusion, I would like to place on record what I have already publicly expressed, *viz.*, my appreciation of the great assistance afforded me by the counsel appearing before the Commission—Mr. McArthur, K.C., and Mr. Owen Dixon for the British Medical Association, and Mr. Lowe for the Friendly Societies' Association so marshalled and presented the facts in support of their respective contentions as to make comparatively easy what would otherwise have been a somewhat difficult task.

Naval and Military.

CASUALTIES.

It is with great regret that we have to record the death of Captain Roy Allen Sillar. Captain Sillar received his commission in the Australian Imperial Force, Army Medical Corps, in March of this year, and was in France at the time of his death.

Since we went to press last week two lists of casualties sustained by Australian troops have been issued. There is no name of a medical officer of the Australian Army Medical Corps in the 414th list. In the 415th list there is a record that Captain Arthur Poole Lawrence is seriously ill.

APPOINTMENTS.

The following appointments, promotions, etc., have been published in the *Commonwealth of Australia Gazette*, No. 99, of July 4, 1918:—

Australian Imperial Force.

Army Medical Corps.

To be Lieutenant-Colonel—

Captain (temporary Major) A. J. MacKenzie, Australian Army Medical Corps. 4th June, 1918.

To be Captains—

Honorary Captain J. C. McLean, Australian Army Medical Corps Reserve. 4th June, 1918.

Honorary Captain R. D. Aitchison, Australian Army Medical Corps Reserve. 13th May, 1918.

Honorary Captain E. N. H. Gandevia, Australian Army Medical Corps Reserve. 13th May, 1918.

Captain (temporary Major) H. R. Sear, Australian Army Medical Corps. 20th May, 1918.

William Broad. 23rd May, 1918.

Grant Bramhall Lindeman. 20th May, 1918.

Clive Reginald Alexander. 27th May, 1918.

Robert Kellas. 4th June, 1918.

Australian Naval and Military Expeditionary Force.

Australian Army Medical Corps.

To be Captains—

Honorary Captain Á. C. Magarey, Australian Army Medical Corps Reserve. 8th April, 1918.

Honorary Captain R. A. Gardner, Australian Army Medical Corps Reserve. 30th April, 1918.

Australian Military Forces.

Second Military District.

Australian Army Medical Corps Reserve—

Edwin Walter Fitzpatrick to be Honorary Captain. 22nd March, 1918.

Third Military District.

Australian Army Medical Corps—

Captain (provisional) H. N. M. Puckle to be seconded whilst serving with the British Army (Royal Army Medical Corps).

Australian Army Medical Corps Reserve—

Clive Menzies Eadie to be Honorary Captain. 24th April, 1918.

Honorary Major H. P. Brownell, D.S.O., to be transferred from the Australian Army Medical Corps Reserve, Sixth Military District. 13th May, 1918.

Honorary Captain O. Behrend to be transferred from the Australian Army Medical Corps Reserve, Fourth Military District. 20th May, 1918.

Fourth Military District.

Australian Army Medical Corps Reserve—

Honorary Captain O. Behrend to be transferred to the Australian Army Medical Corps Reserve, Third Military District. 20th May, 1918.

Sixth Military District

Australian Army Medical Corps Reserve—

Honorary Major H. P. Brownell, D.S.O., to be transferred from Third Military District. 13th May, 1918.

Temporary Appointments to Permanent Referee Boards.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of Honorary Captain F. J. Walden, Australian Army Medical Corps Reserve, being granted the temporary rank of Lieutenant-Colonel, and pay of such rank whilst employed as President of the Permanent Medical Referee Board, Fifth Military District. 7th June, 1918.

Obituary.

JAMES BEVERLEY METCALFE.

The task of recording the career of a departed member of the medical profession is always a sad one. When the obituary notice is of a practitioner who had sacrificed his life in the performance of his duties to his King and country, the task becomes still sadder. It is scarcely surprising that the medical officers attached to our forces, who fall, are usually those whose qualities as medical practitioners and as men place them in the foremost rank of their profession. While we mourn our loss, we feel proud of our gallant colleagues, whose splendid records have contributed to the fame of the Australian Army Medical Corps. At the same time, we rebel, though in vain, against the fate that inflicts such irreparable damage among a limited number of highly trained and exceptionally intellectual men.

James Beverley Metcalfe was born on January 26, 1888, at Norfolk Island. He was educated at the King's School, Parramatta, in New South Wales, and, after matriculating in 1906, won the Burton "A" Scholarship, tenable at St. Paul's College, within the University of Sydney. He attended the lectures for the Faculty of Arts during 1906, and then passed into the Medical School, where he became a universal favourite. His popularity was enhanced by his prowess on the football field and on the tennis court. He obtained his double "blue," and represented the State of New South Wales at tennis. He graduated in 1911 with honours. He was then appointed junior Resident Medical Officer at the Royal Prince Alfred Hospital, a position which he retained for twelve months. At the end of this time he went into practice, first at Molong and Manildra, and then at Wellington, New South Wales. At the last-named place he rapidly built up a good practice, and became as popular with his patients as he had been with his comrades at school and his fellow-students at the University. In 1912 he joined the Australian Military Force, and obtained a commission in the Army Medical Service. In 1915 he offered his services to the military authority, and went into camp in November of that year. He was gazetted a Captain of the Australian Imperial Force, Army Medical Corps, on March 1, 1916, although he actually sailed for Egypt in the month of February. He was attached to the 14th Field Ambulance, and remained with his unit in Egypt for six months. Early in September the unit was transferred to France. He saw a considerable amount of service, and distinguished himself greatly. For his gallantry

and devotion to duty he received the Military Cross, and he was also promoted to the rank of Major. In October, 1917, he was severely wounded. His convalescence was passed in England, and, after recovery, he served for a time under the Director of Medical Services, with the temporary rank of Lieutenant-Colonel. He was then appointed to the Australian Auxiliary Hospital at Harefield, but refused to remain there when the German push began in March, 1918. He was attached to the No. 10 Field Ambulance, and reverted to his old rank of Major. On April 25 a shell burst in the dressing station to which he was attached. Both his legs were blown off, and he died within a few hours.

He was a man of very high character, and had the faculty of making everybody like him. A correspondent, writing of him, states that James Beverley Metcalfe was a "man" in every sense of the word.

Medical Appointments.

It is announced that Dr. Albert Curtis (B.M.A.) has been appointed Superintendent of the Hospital for the Insane, Ballarat, during the absence on leave of Dr. W. H. Barker (B.M.A.).

Dr. H. B. Ellerton (B.M.A.) has been re-appointed Inspector of Asylums for the Insane, and Medical Superintendent of the Hospital for the Insane, Goodna, Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xv.

In future, no advertisements inviting applications from medical practitioners for positions in public institutions will be accepted unless the appointment is limited to medical practitioners who are ineligible for military service, or who have returned from military service. The term "ineligible for military service" is used to signify practitioners who are above military age, those who have offered their services and have not been accepted by the military authorities, or those who, for valid reasons, are incapable of applying for a commission in the Australian Army Medical Corps.

Winton Hospital, Queensland, Surgeon.

Lunacy Department, Victoria, Temporary Medical Officer.

Royal Alexandra Hospital for Children, Camperdown, Temporary Relieving Ophthalmic Surgeon.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other contract practice. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United Friendly Society Institute. Townsville Friendly Societies' Medical Union. Cloncurry Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp. Adelaide. Contract Practice, Appointments at Renmark.
WESTERN AUSTRALIA. (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Parramatta, Auburn and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, N.Z.

Diary for the Month.

July 16.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
July 17.—W. Aust. Branch, B.M.A.
July 18.—Vic. Branch, B.M.A., Council.
July 19.—Q. Branch, B.M.A., Council.
July 19.—Eastern Suburbs Med. Assoc. (N.S.W.).
July 20.—Northern Suburbs Med. Assoc. (N.S.W.).
July 23.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
July 25.—S. Aust.. Branch, B.M.A.
July 26.—N.S.W. Branch, B.M.A.
July 31.—Vic. Branch, B.M.A., Council.
Aug. 2.—Q. Branch, B.M.A.
Aug. 7.—Federal Committee of the British Medical Association in Australia (Sydney).
Aug. 7.—Vic. Branch, B.M.A.
Aug. 9.—S. Aust. Branch, B.M.A., Council.
Aug. 9.—N.S.W. Branch, B.M.A., Clinical.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed "to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.

The Honorary Librarian of the New South Wales Branch of the British Medical Association is anxious to complete the series of the *Lancet* at present in the library of the Branch. Volume I., January to June, 1898, Volumes I. and II., January to December, 1908, and Volume I., January to June, 1909, are needed for this purpose. The Librarian will be grateful if any member who is able to present to the library one or more of these missing volumes, either unbound or bound, will communicate with the Honorary Secretary of the Branch, Dr. R. H. Todd, B.M.A. Building, 30-34 Elizabeth Street, Sydney.